FEB 18 1924

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 50, No. 11.
WHOLE No. 860.

RICHMOND, VA., FEBRUARY, 1924

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS.

The Underlying Principles of Surgery of the Intestines and Stomach. J. Shelton Horsley, M. D., Richmond, Va. ---- 731

The Rehabilitation of Young Women. Tom A. Williams, M. D., C. M., Washington, D. C. ---- 737

The Scope and Limitations of Subtemporal Decompression in Acute Brain Injuries. J. G. Lyerly, M. D., Richmond, Va. ---- 742

Some Points in the Diagnosis of Extra-Uterine Pregnancy. W. Dennis Kendig, M. D., Kenbridge, Va. ---- 747

Tuberculous and Non-Tuberculous Complications at Pine Camp Sanatorium during the Year 1922. W. Nelson Mercer, M. D., Richmond, Va. ---- 749

Two Short Public Health Courses at the University of Virginia. Harry T. Marshall, M. D., University, Va. 752

Handicaps to Public Health Administration. Roy K. Flannagan, M. D., Richmond, Va. ---- 754

The Value of Diphtheria Toxinantitoxin in Rural Communities. William S. Keister, M. D., Charlottesville, Va. ---- 759

The Roentgen Ray Treatment of Certain Non-Malignant Conditions of the Uterus. A. L. Gray, M. D., Richmond, Va. ---- 762

Mesenteric Tumors. Julian L. Rawls, M. D., F. A. C. S., Norfolk, Va. ---- 764

Ovarian Cyst with Report of an Unusual Case. J. Coleman Motley, M. D., F. A. C. S., Abingdon, Va. ... 767

How does Radium Produce Its Results? A. P. Jones, M. D., Roanoke, Va. ---- 768

Subacute Bacterial Endocarditis in Children. W. C. Caudill, M. D., Pearisburg, Va. ---- 769

Influences at Work About the Infant. Daniel M. Moore, M. D., Stonega, Va. ---- 771

The Care of Tuberculous Patients with Reference to the Prevention of Giving the Disease to Others. J. B. Nicholls, M. D., Catawba Sanatorium, Va. ---- 773

Diagnostic Consideration of the Gonococcus and Other Diplococci in Chronic Urethral Infections. Thomas V. Williamson, M. D., Norfolk, Va. ---- 775

Focal Infections. Fletcher D. Woodward, M. D., Newport News, Va. ---- 779

Some Questions as to Life. Charles Minor Blackford, M. D., Staunton, Va. ---- 781

The Incidence of Heart Disease in the Negro Race. W. S. Woody, B. S., M. D., Hopewell, Va. ---- 784

Presentation of the Bronze Bust of Dr. Rawley White Martin to Confederate Battle Abbey. Stuart McGuire, M. D., Richmond, Va. ---- 787

Presentation of the Portrait Bust of Dr. Hunter Holmes McGuire to Confederate Battle Abbey. Don P. Halsey, LL. D., Lynchburg, Va. ---- 789

ANALYSES, SELECTIONS, ETC. ---- 790

THE TRUTH ABOUT MEDICINE ---- 791

BOOK ANNOUNCEMENTS ---- 792

EDITORIAL ---- 793

NEWS NOTES ---- 796

OBITUARY ---- 804

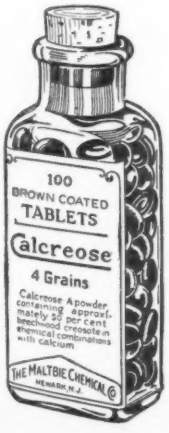
INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

Tablets

Powder

Solution



PULMONARY TUBERCULOSIS

In many cases cough is indispensable and is best treated by promoting expectoration. For this purpose, creosote is a reliable remedy.

—(*Stevens Manual of Practice of Medicine, p.* 384)

CALCREOSE (calcium creosotate) is a mixture of approximately equal parts of beechwood creosote and calcium, which possesses the pharmacologic activity of creosote but apparently does not cause gastro-intestinal disturbances.

To secure the best results from the use of CALCREOSE it is important to give it in proper dosage. CALCREOSE may be given in the form of the solution or tablets.

Literature sent on request

MALTBIE CHEMICAL COMPANY, - Newark, New Jersey

MEAD'S

BETTER BABIES

SICK INFANTS

A food formula adapted to the well baby is in most cases entirely unsuitable for sick infants.

Athrepsia

Diarrhoeas

Colic in Breast-Fed Infants

Non-Thriving Breast-Fed Infants

Loose Green Stools Commonly Seen in Breast-Fed Infants

can generally be controlled by the physician who is familiar with

MEAD'S CASEC
AND
MEAD'S POWDERED PROTEIN MILK

The value of these products has been demonstrated by pediatrists.

We will be pleased to send any quantity of these products to any physician to enable him to determine their merits in any number of these types of cases.

THE MEAD JOHNSON POLICY

Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD'S INFANT DIET MATERIALS

Mead Johnson & Company

Evansville, Indiana

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 50, No. 11.
WHOLE No. 860.

RICHMOND, VA., FEBRUARY, 1924

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE UNDERLYING PRINCIPLES OF SURGERY OF THE INTESTINES AND STOMACH.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

The underlying principles of most surgical procedures depend upon physiology, and physiology occurs only in living tissue. Surgery of the intestines and the stomach should be based upon physiologic principles, though satisfactory mechanical technic is also essential. It is doubtless better for an operation to be performed bunglingly, if founded upon correct principles, than to have a skillfully executed surgical technic that ignores physiologic principles; but a combination of principles and good technic would be ideal.

The basis for the underlying principles of surgery of the intestines and stomach can be found in recent works on physiology. It is important to emphasize that the books must be recent, for even in the last few years the American and English physiologists, Cannon, Bayliss, Starling, Carlson, Luckhardt, Dragstedt, Alvarez and others have revised many of our former ideas about the function of the stomach and intestines. These new views concerning peristalsis and secretion have an important bearing on surgery of the gastro-intestinal tract.

In surgery of the bowel, after removing or correcting the pathology, efforts should be made to restore function, and there must be a knowledge of the function in order to restore it satisfactorily. Because a certain surgical technic may be successful in the upper intestinal tract, it does not by any means follow that it will be equally useful in the lower ileum or the colon.

The two most important factors in the function of the intestinal tract which affect surgical operation in the upper and in the lower bowel are peristalsis and the bacterial content. Alvarez has called attention to what he terms the "gradient" theory of peristalsis, and claims that, in general, peristalsis is more rapid in the upper part of the jejunum, and decreases in rapidity down to the cecum. He says the upper part of the small intestine is named jejunum because it is "hungry" or empty, as it quickly transmits its contents to the ileum. The absorption of products from the upper portion of the intestine when obstructed is for some reason very much more serious than the absorption of products of obstruction lower down. Various theories attempt to explain this difference, but the clinical and experimental fact of the rapidity in the fatal course of obstruction in the upper small intestine as compared with obstruction in the lower bowel is accepted by every one. Dragstedt, of the University of Chicago, has shown that if in a dog the upper jejunum is divided and brought into the incision in the abdominal wall, the animal will die from obstruction due to the slight pressure of the margins of the abdominal incision; though if the lower ileum or colon is similarly treated the animal will survive. If a tube is placed in the severed jejunum to prevent the open intestine being compressed by the abdominal wall, the animal does not die from obstruction. He has demonstrated that pressure by a delicate rubber band which would prove fatal in the upper jejunum, would be successfully overcome in the lower ileum or colon. In view of the rapid peristaltic action of the upper small intestine these findings seem paradoxical. The rapid peristalsis, however, seems to have comparatively little force, and a slight obstruction that cannot be overcome quickly deranges the vital mechanism of the upper small intestine.

The clinical deductions to be made from this are, first, that it is exceedingly important in resections of the upper jejunum to provide an ample lumen at the sutured union. In an end-to-end anastomosis, but little diaphragm must be turned in, and if a continuous mattress suture is used the stitches should be merely snugly approximated and not drawn together

*Read before the fifty-fourth annual meeting of the Medical Society of Virginia, in Roanoke, Va., October 16-19, 1923.

too tightly. A backstitch should be taken at frequent intervals. Preferably only one row of sutures should be used. After the anastomosis is completed the bowel on each side of the union should be invaginated with the finger and thumb to demonstrate whether the lumen at the site of the union is ample. If there is any doubt about this, or particularly if the intestine is dilated from obstruction, an enterostomy should be done. If the anastomotic opening seems too small the suturing must be revised.

In performing an enterostomy anywhere in the small intestine, it is not necessary to use a large tube. The contents are liquid and gas, so a soft rubber catheter, about a No. 14, with one or two additional perforations, is all that is necessary. Elsewhere (Operative Surgery, C. V. Mosby Co., St. Louis, 1921, pp. 592-597, and Clinics and Collected Papers of St. Elizabeth's Hospital, C. V. Mosby Co., St. Louis, 1922, pp. 227-230), I have described a technic based upon the principle of Coffey, in which an incision is made down to the mucosa of the bowel for a distance of about two inches. The mucosa is perforated at one end of the incision and a catheter is introduced through the perforation and fastened by a pursestring suture, which also transfixes the catheter. The catheter is laid on the exposed mucosa and buried with a continuous suture. The mucosa acts as a valve so that when the enterostomy is to be discontinued the tube can be withdrawn, and usually there is no discharge of fecal matter after the catheter has been removed. In this way but few adhesions are left, rest for the sutured bowel is provided during the period of healing of the anastomosis, and, particularly in the upper part of the intestine, any tendency toward obstruction with its serious consequences is eliminated. In surgery of the large intestine where an accumulation of gas may tend to stretch the sutures, where the bacterial content is high, and healing may be poor, the rest given by this enterostomy aids greatly.

In surgery of the upper jejunum and of the duodenum the intestinal contents have very few bacteria, and extreme precautions for preventing contamination with bowel contents are not essential, though it is always wise to be as careful as possible to prevent infection. The importance of clamping and tying all raw surfaces before opening the lumen of the bowel, and particularly of closing the triangular area at the mesenteric border of the small intestine, has been fully emphasized in previous communications. In the upper small intestine, however, it is even more important to provide an ample lumen.

In chronic obstruction of the terminal duodenum, caused by a kink or stenosis where the duodenum becomes the jejunum in the transverse mesocolon, the symptoms frequently resemble those of ulcer or particularly of ulcer with stenosis. In such an obstruction, the duodenum is always dilated. The proper regulation of diet can frequently mitigate this condition, and in mild cases may be practically curative. When the obstruction is persistent however, it should be relieved by surgical procedures. As the duodenum is greatly dilated it can be easily anastomosed by the lateral method to the upper jejunum. I have done this procedure five times without mortality, and with complete relief in the majority of instances.

It has been well established by Cannon, Blake and others that lateral anastomosis is unwise if an end-to-end union can be done. A lateral anastomosis frequently leaves blind pockets which may cause trouble later, and the destruction of the function of circular fibers by the incision for a lateral anastomosis is a very serious objection. However, in certain instances, when the lumen of the intestine is small and the mesentery is fat, it is impracticable to do an end-to-end union, and a lateral anastomosis is indicated.

In the lower part of the small intestines, conditions are quite different. The bacterial content increases, and the activity of the peristalsis is diminished. Fatality from obstruction is delayed in this region and, if there is time for the swelling or congestion to subside, a narrow anastomotic lumen is more consistent with recovery than in the upper intestinal tract. One of the main operative considerations here is the avoidance of fecal contamination. In resection of the lower ileum and the colon, it was formerly my practice to use practically the same technic as was employed in the upper small intestine. About six months ago, however, I lost from infection a patient in whom I had done a resection of the lower ileum, cecum and ascending colon for cancer. The technic was carried out by closing all raw surfaces before opening the

bowel, and by severing the bowel from the mesentery outward. The lumen of the bowel was then disinfected as well as possible with moist bichloride sponges. This is the weak part of the technic, when bacterial contents are great as in this region. It is not possible to disinfect the mucosa of the colon and lower ileum by gentle cleaning with bichloride sponges. Stronger antiseptics will of course injure the delicate mucosa. With the bichloride sponging bacterial virulence can be lessened, but not sufficiently to make the procedure entirely safe. Though I have had a series of ten successful resections of the cecum and ascending colon with this same technic, I cast about for a method of avoiding contamination in such operations.

The problem was quite different from that in the upper small intestine. It is not necessary to establish a wide lumen or to do such accurate suturing, but it is essential to avoid contamination and to provide as far as possible rest for the intestine while healing. The article of Dr. H. H. Kerr, of Washington,

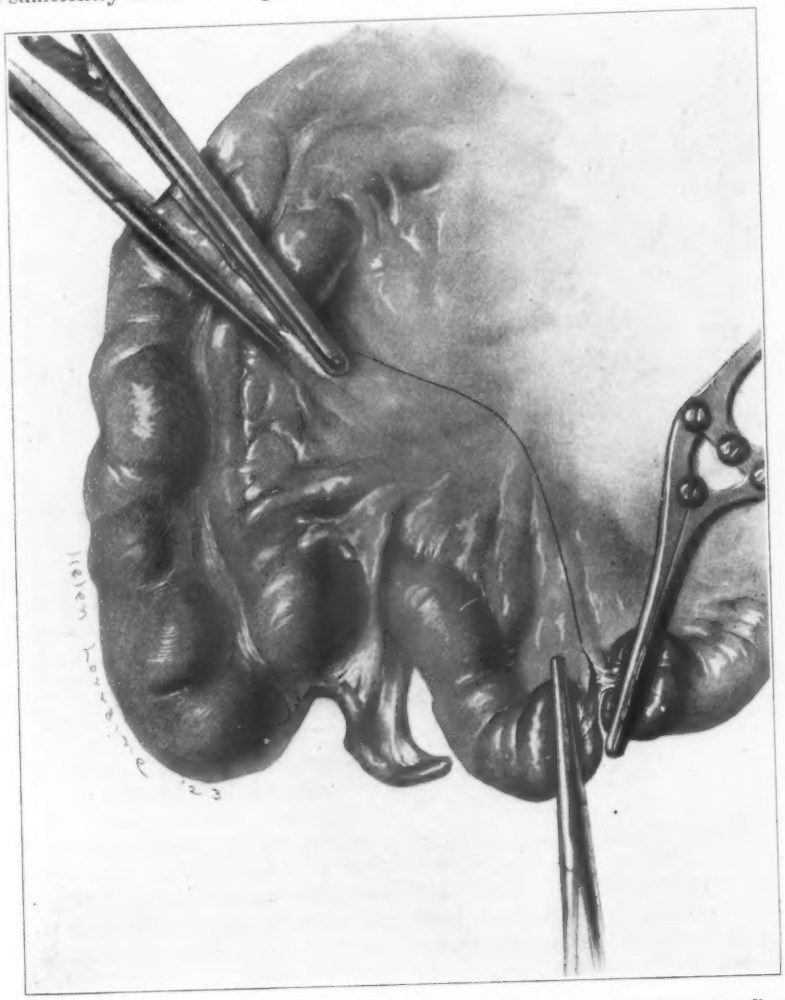


Fig. 1—Drawing shows the resection of the terminal ileum, cecum and part of the ascending colon, according to the technic of Kerr. The black line in the mesentery is point of section. The mesentery along this line should be divided, clamped and tied before the bowel is opened. Note that the clamp on the small bowel is placed at right angles to the mesentery, and on the large bowel parallel to it. The ileum has been divided and cauterized with the electric cautery; the colon is about to be cauterized.

D. C., (Intestinal Surgery," Journal A. M. A., August 25, 1923, pp. 641-647), which was read before the Section on General and Abdominal Surgery of the American Medical Association in June, 1923, seemed to have solved this problem. The technic suggested by Kerr consists essentially of first dividing the mesentery, closing of the raw surfaces, and ligating the blood vessels. Then after packing off the rest of the intestines, the bowel is clamped at the point of proposed resection with two stout clamps placed closely together.

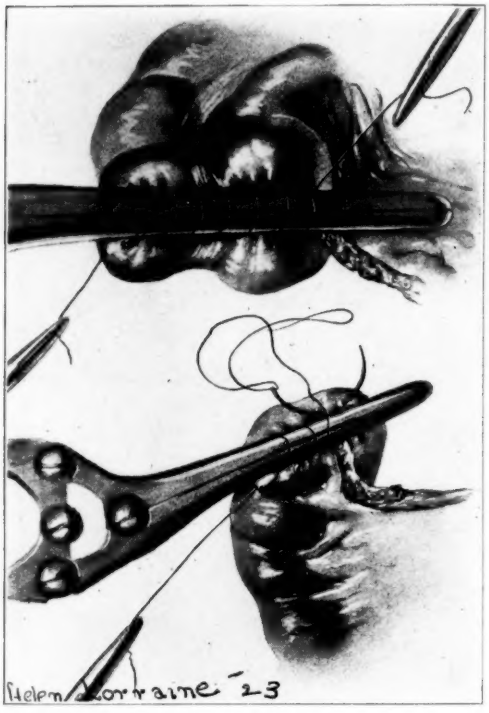


Fig. 2—Both ends of the loop to be resected have been divided, and the basting stitch has been applied on the colon and is being inserted on the ileum. After this is applied the clamps are gradually loosened and removed while the ends of the basting suture are being pulled on in the axis of the blades of the clamp. This automatically inverts the charred stump.

It is divided with the cautery, and the healthy end of the bowel is cauterized down to the clamp as in the clamp and cautery operation for hemorrhoids. Both ends of the loop to be resected are treated in a similar manner (Fig. 1). A basting suture of catgut in a round needle is begun. The first stitch is taken parallel with the axis of the bowel at one side of the clamped bowel. It is then carried over the clamp and a right-angle suture is taken close to the clamp, preferably not entering the lumen of the bowel. This right-angle suture is continued, taking a bite first on one side of the clamp and then on the other. At the end the suture is finished similarly to the way in which it was begun by a bite in the longitudinal axis of the bowel. (Fig. 2). The two ends of this suture, which is a basting stitch, are seized with hemostats and pulled upon as the clamp is gradually released. In this way the charred end of the bowel is automatically infolded. Hemostats grasp the basting stitch close to the bowel. The other end is treated in a similar manner and the two ends of the bowel are brought together while making traction on the ends of the basting stitch. The bowel is sutured

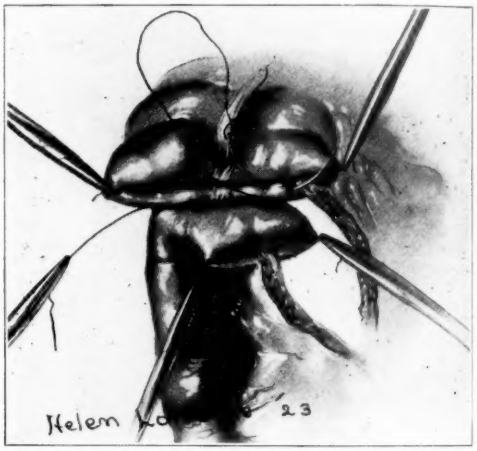


Fig. 3—The ends of the bowel are brought together, keeping traction on the basting stitch. The ileum is fastened to the colon with a continuous suture of linen or silk. This is applied in such a manner as to have a redundancy of about an inch of the ileum in order to produce a slight intussusception and so simulate an ileocecal valve.

bringing the posterior surfaces together with a continuous mattress suture of silk or linen taken close to the basting stitch and using a backstitch at frequent intervals (Fig. 3). The wall of the bowel is snugly approximated, and the suture is terminated by tying it to the end left where the first knot in the suture was tied (Fig. 4). In the large bowel it is well to reinforce this by interrupted mattress sutures of fine tanned catgut. The basting suture is then withdrawn, and the lumen of the bowel is fully established by invaginating the bowel on both sides of the anastomosis with the finger and thumb.

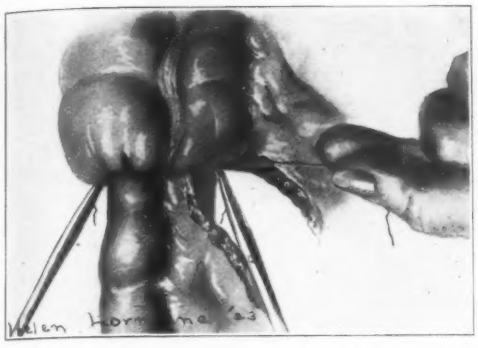


Fig. 4—The suture has been completed, and one basting stitch is being withdrawn, after which the other will be withdrawn. Note that the mesentery of the ileum is not apposed to the mesentery of the colon.

The disadvantage of this operation is that considerable diaphragm is turned in. This would make its use in the upper small intestine, where the bacterial content is low and where the bowel is peculiarly sensitive to even a slight obstruction, rather unwise. In the lower small intestine and in all the colon, however, this objection does not hold, particularly if a catheter enterostomy is done at the time of the resection. Additional advantages are that the diaphragm does not bleed, because it is both crushed by a clamp and sterilized by the cautery, and that no raw surface is left free to absorb the septic material so abundant in the ileum and colon. Methods which involve turning in the raw margin of the bowel of necessity expose to the septic fecal contents this cut surface, which may be capable of immediate absorption of infection. With clamping and cauterization, however, the healing doubtless occurs in the same manner as with the clamp and cautery in a hemorrhoidal operation, the eschar protecting the raw surface until granulations are formed which are competent to resist infection.

There are numerous slight modifications of this technic established by Kerr which would be applicable under varying conditions. For instance, in clamping the resected bowel it is best to place the clamp on one end so that it is not entirely parallel with the mesentery. (Figs. 1 and 4). In this way the mesenteric borders are not approximated, so that the raw surface of the mesentery on one side is apposed by the peritoneum of the bowel on the other. It is well known that it is only necessary to have peritoneum on one side in order to obtain satisfactory union, but it is essential to have peritoneum on one side. Consequently, when the mesenteric borders are accurately apposed, the lack of peritoneum on either side may delay union.

After the anastomosis has been completed, the mesentery is united with a continuous suture of catgut.

Usually an enterostomy along the lines already mentioned is made in the oral end of the bowel about four or five inches from the anastomosis. By using this technic, contamination is practically prevented, especially if the bowel at the site of the enterostomy has been stripped and then clamped with intestinal forceps. The catheter should first be introduced through a stab wound in the abdominal wall, and its outer end clamped in order to prevent fecal matter flowing through the catheter before the tube has been fixed in position.

Since September 1, 1923, I have done two resections of the large bowel with this technic, one for cancer around the ileocecal valve, in which the terminal ileum, cecum and ascending colon were excised. In the other there was a rather advanced cancer of the transverse colon with enlarged lymph nodes, which were probably mostly inflammatory. However, an extensive resection was done, leaving only the sigmoid and cecum and a small stump of the ascending colon (Fig. 5). Both patients have made a satisfactory recovery, though in the latter case much of the gastro-epiploic artery was excised and this interfered sufficiently with the nutrition of the stomach to cause some gastric symptoms. The patient is now doing well.

In surgery of the stomach I have elsewhere called attention to the underlying principles that should govern operations in this region. No one surgical procedure can be made to fit all conditions that may demand operations on the stomach or duodenum. In extensive infiltrating ulcer of the duodenum the most satisfactory procedure is to occlude the pylorus by the simple method of ligating it with a large kangaroo tendon, and then a posterior gastro-enterostomy should be done. It is probably better not to use clamps in a gastro-enterostomy, and to employ absorbable sutures, though with occlusion of the pylorus, nonabsorbable sutures would doubtless give no trouble. In

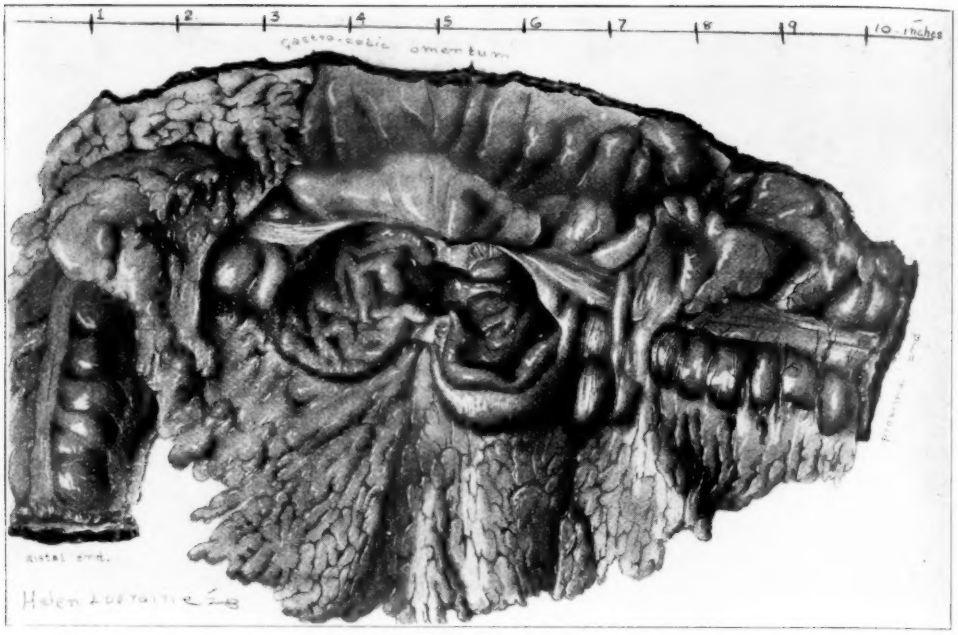


Fig. 5—Drawing of specimen removed according to the technic of Kerr. It consists of most of the ascending colon, the transverse colon, and the descending colon. The specimen is opened from behind. There is a cancer which has produced marked constriction and has everted edges. The specimen contains all of the great omentum and most of the gastrocoli comentum which was removed very close to the stomach. An enterostomy according to the technic described was done in the lower ileum. The patient made a satisfactory recovery.

four cases that I have had, gastro-enterostomy with occlusion of the pylorus was done, following unsuccessful results after pyloroplasty. It seems that occlusion in this simple manner in the presence of adhesions or an ulcer is much more satisfactory than would be such an occlusion performed in normal tissues. It is well known that when a ligature is placed on the normal pyloric end of the normal stomach it eventually cuts through and the lumen is soon re-established. This is the tendency also when there is pathology in this region, but with a large infiltrating ulcer or extensive adhesions the occlusion is more efficient.

When the ulcer is on the stomach side of the pylorus and is large, a resection should be done. If it can be satisfactorily accomplished without too much tension, the Billroth I method, uniting the duodenum to the lesser curvature of the stomach instead of to the greater curvature, is a satisfactory procedure Where a more extensive operation is necessary, the Polya-Balfour anterior method, joining a loop of jejunum to the stump of the stomach after a pylorectomy, gives satisfactory results. A small ulcer in the stomach may be resected locally, taking care to excise no more tissue than necessary, and uniting the wound in three layers with absorbable sutures so as to avoid turning in a great amount of tissue. The only inversion of the peritoneum is in the last row of sutures. The first is merely an approximation of the mucosa, the second uniting the incised muscular and peritoneal coat edge-to-edge, and the third row inverting the second row. It is wise to prevent contamination, but if the tissues are well packed off, the spilling of a small amount of gastric contents is not a matter of great concern.

When the ulcer in the duodenum is well circumscribed or if there is a narrow band of constriction or when a gastrice ulcer is excised at any point, the pyloroplasty which I have described elsewhere is a very satisfactory procedure. In a paper published in the *Journal of the American Medical Association*, September 15, 1923, I reported the late results of fifty-six such pyloroplasties. There were three deaths following operation, all of which oc-

curred in the first twelve cases, and were due to errors that now can be avoided. In the last forty-four consecutive cases there was satisfactory operative recovery and no subsequent deaths. Of these cases thirty-two are complaint-free, and fourteen were improved. Two could not be traced, though they were complaint-free when last heard from, a few months after operation. Five were unimproved, and were subsequently operated upon again, in one case a pylorectomy being done, and in four a gastro-enterostomy. They are now complaint-free so far as gastric symptoms are concerned. All of the unimproved patients and many of those who are slightly improved were in the earlier series of cases, so that not only has there been no fatality in the last forty-four cases of this series, but there has been a much smaller proportion of unsatisfactory results in the last two-thirds of the series than in the first third.

In conclusion, I wish to emphasize that while it is a fundamental essential to understand the technic of the application of intestinal sutures, it is no less important to view surgery of the gastro-intestinal tract from the standpoint of physiologic function, and to make the operative technic in any particular region conform to these principles.

THE REHABILITATION OF YOUNG WOMEN.*

By TOM A. WILLIAMS, M. B., C. M., Washington, D. C.

As applied to soldiers, rehabilitation is a familiar word. Many look upon it as a novelty of the war and attribute the need for it to army life. Long before the war, however, one of the chief functions of neurologists was the rehabilitation of ill-adjusted persons. The majority of these were women labeled hysterical, so much so, that at one time that disorder was looked upon as exclusively feminine. Mobilization of an army having focused attention upon disadapted men long enough, it seems timely to bring into the limelight once more the fact that the emancipation of women has not absolved them altogether from former weaknesses which, after all, are merely human. It will be instructive, therefore, to consider some kinds of situations in which young women sometimes fail in adaptation and the kind of measures to be adopted for their rehabilitation.

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

Environmental mal-adjustments show curious expression at times. For instance, it would not be suspected at first that an alimentary disturbance so extreme as the invariable vomiting of food could be attributable to an ethical viewpoint, yet so it frequently is. For nausea is not only an expression of distaste of food but of moral disgust as well.

In one young woman who had been long treated vainly by gastroenterologists, proper psychological exploration showed that she vomited not because food was disgusting in itself but that it reminded her of an episode which made her mouth loathsome. This was having allowed herself in a weak moment to be kissed by a man of evil repute. The uncovering of this incident and its resetting into its proper proportions and relationships caused the association of the incident with the taking of food to cease besides rehabilitating the girl in other respects.

In another patient the mere acquaintance with those of a freer morality than the very narrow one in which she had been brought up led to a disgust of life so great as to lead to hysterical attacks in the office where she worked. In addition to this a severe resentment dominated the girl's relations with others. It took a considerable time to give this patient a proper prospective in these matters and enable her to carry on with any comfort, so deeply rooted were her misconceptions.

In this patient a part was also played by the acute disappointment of a dawning affection unreciprocated by a young man whose alert mind had captivated her slower and more modest intelligence. Very much of a Lothario however, his want of seriousness was quickly found out, to her acute disappointment, even before she had realized under my guidance the depth of her affection.

Situations of this kind, which are very frequent, are among the hardest to adjust in the early stages but, as everyone knows, time works wonders, especially if new impressions of like kind are furnished. When these are lacking the rehabilitation is often tedious.

In one young woman the physical attraction was very intense, although she was fully aware of the unworthiness of its object as a possible husband. The struggle of motives caused great anxiety in a girl already over impressionable to outside opinion, as was shown by a previous laryngeal cramp which prevented her singing

solòs. The love situation not only exhausted her, but the fruit of this was a most obstinate Scrivener's palsy which it took me six months to get rid of. Complications of a physical nature and the method of dealing with the patient were set forth at length in a monograph on "Writer's and other Occupational Cramps" (*Jour. de Neurol. and Psychol.* Leipsic, 1912.) The case itself was also publised in *N. Y. Medical Journal* under the title "Multiple Professional Cramp in a Psychasthenic."

In another instance attacks of apparent unconsciousness were traced to a conflict between a love for the family and the desire for freedom of choice where her affections were concerned. In this case physical fatigue was a factor also, and had to be counteracted long after the psychogenetic situation had been dealt with.

Deepseatedness of Causes.

Dissatisfactions are often deeply hidden, and are scarcely explicit to the patient until she is led to delve into her own motives in an honest fashion. There is so often a mistaken attempt to conceal from herself what looks like a disloyalty to the family or early traditions, which often conflict with the changed circumstances in which the patient finds herself. The reconciliation can, however, be effected by the patient if she is given to understand the proper philosophy. Very often the traditional ethics has been misconceived in too literal a manner, and the conflict disappears upon a proper analysis. Sometimes, however, there is a real conflict between the true aspiration of the patient and the conservative motives of elders between whom an antagonism has arisen which is irreconcilable without extraneous explanation. It is the duty of the psychiatrist to shed this light on these situations. It is usually more difficult to deal with the friends than the patient herself, when these former are obstructing the patient's proper function. But even that can be done when they are convinced of the wisdom and sincerity of the physician for they are often willing to suspend their own judgments in his favour. The result quickly justifies the psychiatrist, and he has then no more loyal supporters than his former antagonists. A case in point is the following:

Awkwardness and shame, paralyzing initiative in work and society, due to environment repression.—A woman, aged 26, was referred by a physician who had unsuccessfully treated her several months. She was very reticent, disclosing her complete story with much difficulty and trepidation. She was eating her heart out in routine work in which she was neither using her college education nor satisfying her craving for contact with other human beings. Nor did her leisure afford her the kind of companionship she longed for. She did not know how to reach away from the safe monotony of a sheltered life into the adventurous variety of the constructive idealism which she worshipped. She was immensely handicapped by a lack of ease of manner and charm, which she envied in others: she was ashamed of her awkwardness.

This situation might only too readily have been attributed to the humiliation she felt at the intense and facile stimulability of her physical sexuality, and a prolonged analytic search might have proved too strong a temptation to those psychopathologists who can think only conventionally.

But as insistent as were the physical discomforts of the patient, I considered that the psychological problem was even more important and that to slough this, a change of environment was imperative. It should not need to be said that explanations as to the significance of reproductive physiology were given, and that these were of great comfort to the patient. Although they scarcely affected the phenomena themselves, they altered many of the psychologic consequences. The patient was assisted to take steps to prepare for an occupation which would favor human contact in constructive work, in which she is now, a year and a half later, happily engaged without supervision.

Thus, even when the aspect of the case is highly sexual, and when physical ebullitions are perhaps the most painful of the discordant elements of a scarcely tolerable situation, yet they may not be the main factor of the maladjustment at all, for adjustment may be effected without any success in mitigating these difficulties. The real issue may be a psychosocial one, and affective satisfaction is then (see some neglected *Psychopathic Factors*, J. A., M. A., 1922) gained by the provision of opportunity for the kind of intellectual activity craved.

The contrary was the family attitude in the notorious Bowles case about which I was consulted on one occasion. This girl at thirteen had eloped with a lad not much older but was

arrested before reaching Baltimore. Placed in a House of Detention, she escaped again, only to be reincarcerated swearing that she would never submit to imprisonment, so she jumped from a third story window, breaking both legs. Before the second arrest the father had been advised by me how to proceed, but he obstinately refused to deviate from his oppressive methods, hence the tragic result.

This case may be contrasted with a very similar one where the adopted father was an intelligent physician and himself brought his girl of fifteen and a half to me. The situation was really much more difficult than the former, for the girl was antagonistic at first, and later admitted a sexual impulsion so strong that she would lock herself in her room for days in order to safeguard herself. Here the family cooperated in freeing the patient and helping her through her difficulties, so that in six months she was happily married.

Temporary Modification of Surroundings.

Sometimes the emotive habit is so firmly fixed that a special environment is required for a time to recondition it. As for instance where intense dread of a stormy father paralyzed the initiative of a child whose mother was unduly solicitous, so that, never able to attend school regularly, she eventually took to bed full of hysterical fancies and terrified at a late budding sexuality. After the discovery of the mechanism, which this girl's reticence made very difficult, the special environment was not in this case provided, so that the rehabilitation has not yet taken place in this instance.

However, in another patient it was two years before the essential measure recommended was adopted. This was a young married woman, the victim of intense terror which was traced to a fear of assault which she feared she might really desire. (See *Jour. Abnor. Psy.*, 1911, for full account of the case.) The disclosure of the mechanism produced no improvement in this patient, and she only recovered when the fostering of distrust of herself by an aunt who lived with her, was removed only two years after the reconditioning.

Deformations of character are sometimes very strongly fixed and retraining may be required. This is especially so concerning motor habits which have necessarily to be considerably automatized. In the case of speech for example, stammering is very often traceable to undue stressing at school or at home in a child whose psychomotor processes are naturally slow, or are retarded in development. The anxiety created by fussy supervision and correction further impedes this smooth co-ordination of the complex speech co-ordination. Once the stammer becomes established, fear of it increases the difficulty. The greater the concentration and determination of the patient, the more likely she is to stammer unless her efforts are directed intelligently which is not often unless she receives some sound information and guidance. The most helpful preliminary to this is a careful analysis of the situation along with a penetrating neurologist.

The same is true of the various tics, the expression of dissatisfaction or uneasiness usually of psychological nature. Space forbids further mention than a reference to an extended presentation in the *J. A. M. A.*, 1922.

However, even though the tic may not in itself be felt as an incumbrance by the patient, yet it is an indication of the need for rehabilitation through an attack upon its sources, of which many of the products may be latent, but are likely to lead to inconvenient mal-adjustments unless dealt with.

Peculiarities as Indicators of Need for Help.

Eccentricity, mendacity, kleptomania, undue immersion in pleasure, work or religious exercises are all indicators of the need for rehabilitation. The principles underlying these aberrations do not differ from those already indicated. They are only the more striking and dramatic manifestations of states that more often show themselves as timidity, undue reticence, unsociability, lack of enterprise, or in quarrelsomeness, despondency, or a pessimistic view of life. All of these are indicators of need of adjustment to life, which is most quickly, completely and economically effected by the medium of the psychiatrist of sound training and judgment.

For instance, a girl, aged 16, athletic and of exuberant nature, was brought to me by a physician relative who looked upon her as in some way different from other girls. He described her as being unreceptive to the exhortations of her mother as regards behaviour, unequal in her collegiate studies and temperamental in her affiliations.

I found a strongly built girl with active cir-

culation, exuberant mentality and facile affectivity. She was exceedingly frank but could not quite analyze the particular difficulty she felt the most, viz., an inability to abstract and generalize to the satisfaction of her teacher of literature. Although her memory for detail was very good, she thought she lacked the power to grasp what were looked upon as the essentials by others. She was unable to give an example of this, however, so the issue could not be decided out of hand. But I set forth how very frequently the same literary work may receive very different appraisement at the hands of various critics, and what is significant in literature depends upon the aspect selected. I analyzed a paragraph to illustrate how different persons would vary in their estimation of the various facts contained therein. I prescribed the daily practice of abstracting a historical work, such as Gibbon or Motley, and asked her to send me some examples of the kind of faults to which she felt herself prone.

But there were other difficulties in this girl's life induced by a strong motive to do right and the conflict between a spontaneity of expression which seemed to her harmless and the inculcations of her elders towards repression of this. By nature a tomboy, she was constantly urged to be ladylike, frowned upon and nagged so that she often wept at her own short comings. And yet underneath it all she felt urged to activity which seemed in itself harmless enough. Long strides, running and leaping, expressions of liking for others did not seem so wicked. Worst of all, upon the establishment of menstruation, the idea was implanted that she must be very guarded in her behaviour towards men, who were depicted as lions in the path seeking to devour her. She related this with bated breath, and the effect of such pernicious advice might have been disastrous but for an innate simplicity and beauty of character in the girl.

It was explained to the patient that it was better to grow up into a strong woman through exercise of her body than to vitiate herself by false ideals of ladylikeness, that all people were not constituted alike and that what might be easy for a more indolent nature would be a penance for her. Nor would ingenuousness of behaviour even with men be misunderstood for long. ("To thine own self be true.")

Another of her troubles was that she was told that her desire to serve put her in a position of inferiority and yet she had been taught that to serve was christian. Being full of energy and quickly sympathetic, she made a practice of running errands for other girls and even doing some of their work. For this she was scolded on the ground that she was being taken advantage of. I could not disapprove of this provided she did not overburden herself and did not encourage indolence in those she helped.

As in this girl the motives are animated by a high moral standard, and as there is great temperamental energy, repressive methods should not be attempted, but scope for her activities should be provided in the fullest measure. Only in this way will the exuberance be balanced and adapted to the exigencies of contact with others. Unskilful guidance may easily mar a promising life whereas the patient's own aspirations are likely to lead her in beneficent directions.

A psychoneurosis is after all only the expression of want of harmony. In the foregoing instances it has been traceable to active positive factors of hurt. But quite often the factors are negative, i. e., the absence of the proper avenue of self-expression, the circumscribing of the personality by an unsuitable environment such as jail. The home may be a prison. One patient characterized it as a "House of Hate." The vacuity of the patient's mind may be the important factor. Here must not only the way be pointed out but pabulum may have to be provided for the constructive impulses which every healthy human being has.

The rapidity with which rehabilitation can be effected is sometimes astonishing, as for instance, in a girl of twenty-one whose psychological development had become arrested at the twelve year old stage because of complete preoccupation by a series of obsessions, of which the most insistent were those concerning urination, but in which the comparison of the ages of associates was also most intensely preoccupying. These were traced to the impulse to transcend a sense of inferiority which had been imposed upon her by parents whose oversolicitude regarding the child's health had reflected upon her behaviour. It was a striking illustration of care killing the cat. From being a girl unable to concentrate upon the least matter extraneous to her obsessions, she has become able not only to discard these completely, but to show a most remarkable capacity to as-

similate scholastic instruction, and to adapt herself to external interest. Besides this, distinct change in her physical appearance is occurring, abstracted looks being replaced by an alert mien.

Physical Factors.

So far allusions have been made only to situations where the source is purely psychological, and usually of social, ethical or moral significance. Quite often, however, the source of disadaptation is a physical inadequacy or defect. For instance in a physician's daughter who showed intense timidity besides being deprived of legitimate satisfactions of social life, the sources of the difficulty lay in an undue fatigability since an infection in childhood, an endocrine inadequacy which impaired activity, and an intense acne of the face of which she was much ashamed and which was the cause of much embarrassment, greatly interfering with her social adjustability. Here not only had psychotherapy to be employed, but the improvement of physical condition was an even more important factor in the rehabilitation of this girl, for her good sense had counteracted much of the environmental distresses.

There is no need to insist upon the need for tracing out and getting rid of chronic infections. There is perhaps more need to urge due attention to metabolic and endocrine factors when a young woman finds herself inadequate. But it does not follow that a latent infection, or a faulty metabolism even when present, is the cause of a disadaptation. Many a surgical disappointment would be saved if this were remembered. On the contrary, dissatisfactions are sometimes expressed as visceral perturbations. Always this must be kept in mind in adjudicating a case which superficially looks medical or surgical.

Thus in a case of claustrophobia and agoraphobia, which I have often related, an enlarged thyroid and rapid pulse were present. Some clinicians might have been tempted to treat these latter without exploring the mechanism of the patient's fears, in the hope that these would disappear as thyroid hyperactivity ceased, for we know that hyperthyroidism is itself panic-bringing. In this instance, this would have been to put the cart before the horse, for the fears were traceable to external situations clothed with dread by the imagination of the patient. The method of finding and removing this was discussed in detail in Chapter VII in my book on "Dreads and Besetting Fears." (Little, Brown & Co. 1923).

Suffice it to say that in a week the fears were completely removed from a girl who in fear had been unable to enter a meeting place, or cross the street without a circulatory reaction so intense as to cause her to tenaciously believe that her heart was diseased. She has remained well for six years.

Many a gastro-intestinal disorder too should be sought not in the gall-bladder or the appendix but in an anxious mind. The same is true of functional cardiac disturbance. The way to rehabilitate cases of this kind is not through hospitalization, but by a psychotherapy based upon the mechanism of the disturbance.

The peculiarities of the period of gestation are well-known: but the puerperium is also a period of difficulty in many young women. Metabolic and endocrine factors however are not the only ones at work in the troubles subsequent to child bearing and during lactation Too little attention is paid to the very profound psychological adjustments often necessitated by the marriage state. Economic situation, temperamental differences and a new mode of life may all come to a head during the inactive period following the birth of a child. Hence, a so-called post-puerperal psychosis may merely be the expression of maladjustment and require a psychological exploration which may provide the stepping stone to setting the patient upon her moral feet once more. For example, in a patient sent from Norfolk eighteen months ago, it was attention to this factor which led to the rehabilitation.

In another particularly complex case in a patient sent from West Virginia last summer, only by sedulous attention to her psychology was suicide prevented and recovery effected.

These contentions, so true, have unfortunately often been misapplied even by skilful physicians and surgeons. And therapeutics based upon them has been attempted *without adequate exploration* to ascertain whether the patient's affection is psychogenetic or not. We should think poorly of the gynecologist who suspended the uterus because of a pain in the back unless he had both incriminated the uterus and excluded bones, joints and nervous system as factors. Very inadequate would be the diagnosis of a neurologist who gave arsphenamin to an ataxic patient unless he both ex-

cluded polyneuritis, pernicious anemia and spinal tumor, as well as found definite signs of syphilis.

And yet much of the psychotherapy attempted is based upon a diagnosis of the situation even less adequate than the foregoing. This is exactly what the charlatans do who are at present riding to wealth on the wave of interest in applied psychology.

So that correct psycho-diagnosis is an essential preliminary to all efforts at rehabilitation, and long and intelligent training is required by those who may hope to succeed in the task.

1746 *K Street.*

DISCUSSION

DR. L. G. PEDIGO, Roanoke: Dr. Williams has been a guest at intervals and we feel that we can take personal liberties in discussing his papers. We can hold up his papers as models for facts. Considering that the author of this paper was born of Scotch and Welsh parents and located in Washington, his treatment of a difficult subject is very edifying. These cases are so difficult that the average practitioner finds great difficulty in dealing with them at all and, if we could unload all our cases of this sort on a man like Dr. Williams, it would be a great comfort. The trouble with this type of case is the lack of the faculty of decision—there is indecision of some kind. It is difficult to bring them to decision on any subject at all. Another feature, and it is a suggestion in regard to the treatment—get the cases away from the family. Of course the family is not always at fault, but the patient thinks so. Her mental attitude is such that the morbid environment must be gotten away from. She impresses upon the new candidate for her affections that there is a diabolical conspiracy against her.

DR. WILLIAMS, (closing): I am very proud to say to Dr. Pedigo that I am not a stranger and you may say anything you like; also, I am a member of the Medical Society of Virginia. Washington is Virginia after all, and a great many patients come to me from Virginia physicians.

About indecision—indecision is usually due to want of understanding on the patient's part. Not knowing her own psychology, she feels that such and such is right. Understanding, for the most part, is being capable of proper judgment. Sometimes, when a patient does not develop the habit of decision, although understanding herself, it is necessary to have training just as in school. One patient now being trained by the wife of a clergyman had been kept childish by her parents during her whole life and, although of good mind, had to be trained just as a child.

A woman from South Carolina, whom I observed, required three months' training in canteen work before she acquired the power of decision. After her training, she managed a canteen in South Carolina, showing great decision of character, after practicing the ideas of her own psychology which she had gained. I think that only when the family influence is very bad should the patient be removed from home, or if you cannot show the family their mistakes and help them overcome the bad influences. As a matter of fact, if you do change the environment, do not put the patient in a general hospital; that's all right physically, but she will do better in some place more like the normal. Only when the personnel is trained for it can harm fail to accrue to neurotics in hospitals. (See "Management of Psychoneurotics in General Hospitals," *Southern Medical Journal*, 1921).

THE SCOPE AND LIMITATIONS OF SUBTEMPORAL DECOMPRESSION IN ACUTE BRAIN INJURIES.*

By J. G. LYERLY, M. D., Richmond, Va.

The studies in this paper are based on a series of ninety-six cases of acute head injuries with unconsciousness, or signs of intracranial injury, who were admitted to the service of Dr. C. C. Coleman of the Hospital Division of the Medical College of Virginia, over a period of one year, from July 1, 1922, to July 1, 1923. This does not include the cases that were seen in other hospitals or in consultation which, if included in this series, would increase the number considerably. Of these cases there were thirteen deaths, making a mortality of 13.5 per cent. This includes all of the fatal cases, some of which died within several hours after admission.

There were forty-one cases which had fractures of the skull, thirty-two of which were compound, eight depressed, and five of the latter were compound as well as depressed. All of the cases of depressed fractures were operated upon to remove the depressed fragments from the brain for local pressure. This does not mean that they had a subtemporal decompression which is done to relieve general intracranial pressure. It may become necessary later to do a subtemporal decompression in these cases if the intracranial pressure becomes excessive.

Of the thirteen cases that died, eleven had fractures, and two showed no fracture of the skull. In these two cases that showed no fracture, one was proved by autopsy, and in the other no autopsy could be obtained, but the X-ray, together with an extensive laceration of the scalp exposing the skull, did not reveal a fracture, although the spinal fluid was very bloody and under increased pressure at spinal puncture. This indicates that it is not necessary for a patient to have a fracture of the skull in order to receive a fatal intracranial injury.

As to the cause of these injuries, there were

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

thirty-three injured by automobiles, twenty-eight by falls, and the others by miscellaneous causes, showing the predominance of the automobile as an etiological factor.

There were forty-six cases with lacerations of the scalp. Regardless of whether or not the patient has a fracture underneath the laceration, it is our practice always to excise these lacerations under local anaesthesia within the first twelve or sixteen hours, or as soon after shock as possible, in order to convert a potentially infected wound into a clean incised wound. For compound depressed fractures or gun-shot wounds of the brain, we follow the plan of Cushing in his war experience of debridement of the scalp and removal of contaminated bone, with irrigation of the wound in the brain with normal saline solution to free it of blood clots and other foreign material.

In this series there were nine subtemporal decompressions with four deaths. Two of the deaths were due to meningitis as proved by autopsy, the source of the infection in one case apparently coming from a fracture into the sphenoid sinus, and in the other from a fracture through the middle ear with rupture of the ear drum on the same side. The third and fourth deaths occurred in patients who developed pneumonia, as proved by autopsy in one case, and clinically in the other.

As the brain is the most important structure involved in a severe head injury, it and its surrounding membranes and fluid will be given the most consideration. Unless there is some depression of fragments causing pressure on the brain or a compound fracture of the vault, fractures of the skull will be given the same importance as laceration of the scalp, bleeding from the ear or nose, ecchymosis around the eyes. or ecchymosis around the mastoid. These are all evidences of a possible injury to a more vital structure within the cranium. Other signs than the above must be looked for, because they do not reveal to us the damage done to the brain, and any of the above signs may be present without evidence of brain pathology.

Intracranial pressure is undoubtedly the most important effect of the average brain injury. It may be due to edema of the brain, intracranial hemorrhage, increased secretion of the cerebro-spinal fluid. transudation of serum from the traumatized tissues into the fluid spaces, or the lack of absorption of the cerebro-spinal fluid.

The most logical way of classifying these cases from the therapeutic standpoint would be: (1) Those which do not have intracranial pressure; and (2) those which do have intracranial pressure. Under the class of cases which do have intracranial pressure it may be due to: (a) edema of the brain; (b) hemorrhage; (c) edema plus hemorrhage; (d) meningeal hemorrhage; (e) infections, meaning meningitis, encephalitis, or abscess; and (f) localized pressure as in depressed fractures.

When a patient is admitted to the hospital in an unconscious condition, or with a history of transient unconsciousness, every effort should be made to determine whether or not he has a dangerous pressure. The signs upon which we rely chiefly to determine this are: drowsiness or unconsciousness, pulse rate, systolic and diastolic blood pressures, eye-ground findings, and spinal fluid pressure measured with a manometer at spinal puncture; and of less importance signs such as vomiting, condition of the pupils, X-ray examinations, focal signs, temperature, convulsions, and respiration. If there is a rapid increase in the intracranial pressure, as from hemorrhage, during the first three to twelve hours, there will be first a slowing of the pulse rate and a rise in the systolic and pulse blood pressures. Later, if the pressure is not relieved, a rise in the pulse rate and a fall in the systolic with a high pulse pressure will result from a fatal pressure transmitted to the medulla. If the life of the patient is to be saved, before the pulse rate begins to rise or the systolic blood pressure drops, quick and efficient measures will have to be instituted to relieve the pressure, employing a subtemporal exposure to evacuate the clot and stop the bleeding, as in meningeal hemorrhage. It would be useless to temporize with a spinal puncture to relieve the pressure in such a case. Should the pressure come on more slowly over a period of days, as from cerebral edema, we have not found any great rise in the systolic blood pressure, but there does seem to occur a rise in the pulse pressure and a slowing of the pulse rate. Here haste in radical measures to relieve the intracranial pressure may not be necessary, and resort to more moderate procedures is advisable. There may be given a thirty per cent solution of sodium chloride in one to two ounce doses every three hours, or a saturated solution of

magnesium sulphate given in half ounce quantities every three hours, as advised by Dowman, with daily spinal punctures to estimate the spinal fluid pressure with the manometer and to reduce the pressure by withdrawal of the fluid as advised by Jackson and others.

Some brief reports are given herewith as an illustration of acute brain injuries, some of which may or may not be aided by a subtemporal decompression.

The following case illustrates the great benefit that may be derived from spinal punctures alone, in a case of rather severe intracranial injury with subarachnoid hemorrhage and pressure:

Case 40, J. H., white, male, age 60 years, admitted on March 12, 1923, with history of being knocked down by an automobile. Was unconscious and had hematoma in right posterior parietal region. Had ecchymosis around right eye, vomiting, and had bleeding from nose. Reflexes were normal, and had no paralysis. Pupils were equal and reacted to light. Eye-grounds showed engorgement of retinal veins. Pulse 72, blood pressure systolic 180, diastolic 90. Spinal fluid very bloody, pressure 30 mm. hg. Battle's sign developed behind both ears. X-ray did not show a fracture. Patient was very restless and semiconscious for a week. General condition was very poor with serious chest injuries and associated complications. Intracranial pressure was relieved by repeated spinal punctures and hypertonic fluids by mouth. Patient made an excellent recovery.

This patient's general condition was not good. The intracranial pressure was readily controlled by repeated withdrawal of the bloody subarachnoid fluid. Free blood in the subarachnoid spaces can be removed most easily by lumbar drainage, and it alone should not be an indication for a subtemporal decompression, because all of the free blood is not removed in this way.

We have never seen any danger result from spinal punctures in the early stages of acute brain injuries even when the intracranial pressure was high. A careful eye-ground examination is always made before every spinal puncture, to rule out a choked disc which, in our opinion, should exclude a spinal puncture in any case because of the well known fatal tendencies of a spinal puncture in a brain tumor with choked disc. We have never seen a choked disc in acute brain injury even when the spinal fluid pressure was high as registered by the manometer.

The following case is an example of almost immediate relief of symptoms following a subtemporal decompression:

Case 9, J. C., white, male, age 64 years, admitted November 9, 1922, with history of falling from wagon. Was temporarily unconscious. Examination showed contusion of scalp in left parietal region. Battle's sign was marked behind left ear. Was conscious and rational, but had marked aphasia. He could understand what was said and could write his name very well, but could not name objects nor say what he wanted to say. No paralysis was present except for little weakness in right lower face. Pupils were equal and normal. Eye-grounds showed engorgement of retinal veins and hyperemia of left disc. Reflexes did not show anything abnormal except for a few beats of ankle clonus on right side. Pulse was 56, and blood pressure was systolic 140, diastolic 78. X-ray showed fracture of skull starting in left parietal region running down into base of left middle fossa. Under local anaesthesia a left subtemporal decompression was done. The dura was very tight and, upon nicking same, a stream of bloody fluid escaped under high pressure. The brain was found to be contused and plum colored. On the following day the aphasia was improved. The patient was discharged three weeks later without headache or any signs of aphasia.

Attention has been called to the fact by Naffziger that in a certain proportion of cases there seems to be imprisoned a large collection of fluid in the subdural space and, when the dura is nicked at subtemporal decompression, the fluid spurts under great pressure. This fluid which is between the dura and arachnoid cannot be removed by spinal puncture, which only drains the subarachnoid space. A subtemporal decompression here gives a prompt and satisfactory relief of symptoms.

The following case is an example of a rather severe brain injury with increased intracranial pressure, in which a subtemporal decompression does not prevent a fatal issue:

Case 5, W. B., colored, male, age 50 years, admitted on July 8, 1922, with history of being knocked down by an automobile and rendered unconscious. Since then has been in a stupor

and extremely restless, scarcely ever using right arm or leg. Pupils were equal and sluggish. Right biceps and knee jerks greater than left. Umbilicals absent on right. Positive Oppenheim and Gordon on right. Pulse 64, and blood pressure systolic 124, diastolic 85. X-ray showed a fine linear crack in the frontal bone. Eye-grounds were negative except for fullness of veins. Spinal puncture showed extremely bloody fluid, hemoglobin estimation on fluid fifty per cent, pressure 18 mm. hg. Under local anaesthesia a left subtemporal decompression was done finding subdural hemorrhage and contusion and laceration of brain on left side. The brain was under high pressure, was very dry, and no fluid was present in the subarachnoid spaces. On the following day spinal puncture showed pressure of 16 mm. hg., and fluid less bloody. Blood pressure systolic 134, diastolic 88, pulse 70, extremely restless. Temperature, pulse, and respirations gradually went up and patient died of pneumonia on sixth day. Autopsy revealed fracture of the skull, laceration and contusion of the brain, subdural hemorrhage, and hypostatic pneumonia.

It cannot always be predicted as to whether or not a subtemporal decompression will adequately offset the pressure. There seems to be a class of cases in which the brain is under tremendous pressure and, when it is exposed by a subtemporal decompression, it is found to herniate rapidly upon opening the dura, and to be extremely dry and without any free subdural fluid. When this condition exists, the subarachnoid spaces over the cerebral cortex are probably obliterated and the cerebrospinal fluid cannot be absorbed. Then it is necessary, along with a subtemporal decompression, to resort to spinal drainage to remove the dammed up fluid in the basal cisterna and ventricular system. Dr. C. C. Coleman is of the opinion that unless a subtemporal decompression removes something, whether it be free fluid, blood clot, or some other foreign substance, it generally fails to relieve the pressure.

The following case is another example of great benefit derived from a subtemporal decompression:

Case 79, E. F., white, male, admitted on August 4, 1922, with history of a fall by which he was rendered unconscious. Had a laceration in the occipital region, which was excised under local anaesthesia and the wound sutured. Had bleeding from left ear, and eye-grounds showed retinal veins engorged. X-ray was not conclusive of fracture. Pulse was 52, blood pressure systolic 136, diastolic 84, on admission. Three hours later blood pressure systolic 122, diastolic 62, pulse 60. Four hours later blood pressure systolic 114, diastolic 60, pulse 56. Thirteen hours later blood pressure systolic 128, diastolic 28, pulse 60. Twenty-one hours later blood pressure systolic 114, diastolic 20, pulse 56. Spinal puncture showed bloody fluid under pressure of 30 mm. hg. Under local anaesthesia a right subtemporal decompression was done. Upon opening the dura a large amount of free fluid escaped under great pressure. The brain was contused and edematous. The patient made a rapid recovery and was discharged from the hospital in two and a half weeks.

This case also indicates the wonderful improvements following a subtemporal decompression upon finding a large amount of subdural fluid and a wet edematous brain. It also exhibits beautifully the falling diastolic and rising pulse pressures with a slowing of the pulse rate in a progressive rise in the intracranial pressure from cerebral edema and subarachnoid bleeding. We do not believe that spinal punctures here alone would be sufficient to take care of the intracranial pressure which probably would continue for several months following such an injury.

The following case shows how hopeless some patients are from the first, usually dying within several hours after admission, regardless of what is done for them:

Case 93, J. F., white, male, age 11 years, admitted on April 30, 1923, with history of falling four stories from a building. Was unconscious and had extensor rigidity of neck, back, arms and legs, resembling decerebrate rigidity. This was more marked on the right side. Pupils were dilated and equal and did not react to light. There was an inexhaustible ankle clonus on the right side, and exhaustible on left. Had double Babinski. Vomited some blood. At 7:30 P. M. pulse was 100, blood pressure systolic 122, diastolic 78. One hour later, pulse was 90, blood pressure systolic 144, diastolic 76, temperature 101.4. Two hours later pulse was 112, blood pressure systolic 130, diastolic 46, temperature 104. At 11:30 P. M., four hours later, pulse was 160, blood pressure systolic 120, diastolic 20, temperature 107.4. Patient died eight hours after admis-

sion. X-ray showed fracture of first cervical vertebra.

This patient had a direct injury to the medulla. The rapid rise in temperature, the pulse, and blood pressure findings were especially of interest. The systolic blood pressure remained up until the end, while the diastolic pressure was falling, giving a progressive rise in the pulse pressure, accompanied by an increase in the pulse rate and a hyperthermia, which meant disturbance of the medullary centers.

There does not appear in this series a typical case of extradural hemorrhage, such as we very much look for but rarely ever see. There does appear a case of extradural hemorrhage with which was associated grave injuries to the intracranial structures but to which death could not be attributed alone.

Case 7, R. H., colored, male, age 25 years, admitted February 2, 1923, with history of having fallen a considerable distance. Entered hospital deeply unconscious and in shock, with bleeding from nose and left ear. Few hours later, right pupil was larger than left and did not respond to light. Had double Babinski and vomited. Had laceration of scalp over right parietal region. Pulse was 60, and blood pressure systolic 130, diastolic 90. Two hours later pulse was 70, blood pressure systolic 144, diastolic 32. With diagnosis of probable extradural hemorrhage, it was decided to operate at once, but the patient died of respiratory failure before the operation could be done. Autopsy revealed fractures of the skull radiating into all three fossae on both sides of the skull, with part of the rim of the foramen magnum split off and depressed, extradural hemorrhage one inch thick on right side, and thick layer of subdural hemorrhage all over the surface of the brain and around the medulla.

There is probably no other condition which the surgeon must recognize and meet more promptly than a case of extradural hemorrhage. The history of a relatively mild head injury, with or without temporary unconsciousness, followed by the so-called "lucid interval" of consciousness, and then followed by unconsciousness, should always put us on our guard against extradural hemorrhage. The condition must be recognized early, relying on the patient's history and condition before he becomes unconscious, also the unequal pupils, the slow pulse, and the high systolic and pulse pressures. When it is recognized, a prompt operation must be done through the subtemporal route, with removal of the blood clot and ligation of the bleeding vessel, even before the systolic blood pressure falls or the pulse rate increases, if the life of the patient is to be saved.

503 *Professional Building.*

Discussion.

Dr. Julian Rawls, Norfolk: I would like to call your attention to some apparently very severe brain injuries which have entirely cleared up on only symptomatic treatment. Of course there are times when an operation is an absolute necessity either to save life or to prevent bad sequelae.

Recently we had six cases in a period of three months, all of which were treated symptomatically, all of which recovered and, up to date, none of which have developed bad symptoms.

One of these patients was a negro man brought in the hospital by the patrol. He had a bullet wound between his eyes from which brain tissue was oozing. The next morning he had some little disturbance in mentality, he answered questions rather slowly, but that was about all. An X-ray showed the bullet to be in the mid-line about one-half an inch from the occipital bone. It had missed both his optic nerve and his longitudinal sinus. He stayed in the hospital for two weeks with no rise of temperature and practically no mental disturbance. I saw him two months after leaving the hospital, when he appeared to be perfectly normal in every way. No attempt was made to remove the bullet.

Another case was a child who fell from a second story window and landed on her head on a concrete pavement. She had a fracture completely across the vault with a fluctuation all over her head. She probably did her own decompression beneath her scalp. Within a week her symptoms had entirely disappeared and she left the hospital.

In another case a child was brought in who had been run over by an automobile. She had two convulsions in the ambulance coming in. She was in coma all night, but by morning her symptoms began to clear up and in a few days she was all straight. This child had a discharge of serum from her ear.

In another case, a young school teacher was run over by an automobile. She had both a fracture of the base and a fracture of one lamina of the third cervical vertebra. She developed a facial paralysis and was unconscious for three weeks. Under expectant treatment her paralysis has cleared up, her physical symptoms have disappeared and her mental condition, except for a slight instability, is normal. She was injured in April and she expects to resume her school teaching in February.

Now don't misunderstand me. I do not believe in sitting by and letting a patient drift on until a falling blood pressure and a rising pulse rate indicate that we have waited too late to save his life or until we doom him to a life of mental instability or possibly epilepsy, but I do believe that a good many cases of severe brain injury are best treated expectantly.

SOME POINTS IN THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY.*

By W. DENNIS KENDIG, M. D., Kenbridge, Virginia.

Our whole knowledge of a proper conception of the subject of extra-uterine pregnancy dates back since 1863 when Lawson Tait operated his first case. Since that time much advance has been made with the diagnosis and treatment of this condition, yet within the last few years very little that is new has developed. However, because mistakes in diagnosis seem to be relatively more frequent than would be expected, because it is a condition of frequent occurrence, and because early operative measures are of such great importance, this paper would seem to be justified. My attention was called to this difficulty in diagnosis from the fact that our records show that less than 50% of cases of extra-uterine pregnancy admitted to the hospital were diagnosed before admittance.

Brady, in the *Johns Hopkins Hospital Bulletin* last May, states that in a series of fifty cases from 1917 to 1922, their diagnosis, after admittance to the Hospital was correct in 72% of all cases taken together, 75% in tubal abortion and rupture, and 60% in unruptured cases. At first glance, extra-uterine pregnancy may not seem to be so frequent, yet Fancher states that it is estimated that about 1% of all pregnancies are extra-uterine. The necessity of early operation is well stated by Montgomery of Philadelphia, who "believes it better to operate at once even though the patient may be profoundly shocked, and then employ measures for restoring circulation as the operation proceeds." De Lee quotes Schauta as saying that in 241 cases of extra-uterine pregnancies treated expectantly, he found 75 recoveries and 166 deaths.

Pathologically, extra-uterine pregnancy is divided into ovarian, tubal and abdominal pregnancy. This condition is also divided into three definite stages, exhibiting different symptoms and presenting different problems to the physician, viz: Before rupture, after the time of rupture, and those cases which survive rupture without operation. Yet, on account of the fact that a majority of the cases mark this stage, on account of the necessity for an early recognition of such cases and on account of the demand for prompt operative interference in the ruptured stage, I shall confine my remarks to the discussion of this, the tragic stage of extra-uterine pregnancy. Nearly all cases of extra-uterine pregnancy rupture before the twelfth week. Polak found that 299 cases out of 307 reported ruptured before this time. A ruptured extra-uterine pregnancy is seen usually first by the general practitioner. The recognition of the condition, except in the text book cases, requires a careful history, a thorough physical and laboratory examination, and even then a large percentage of cases are not recognized until a laparotomy is performed.

It is considered that the history is of first importance in the diagnosis of extra-uterine pregnancy. Change in menstruation constitutes the most important point in the history. You will find a missed or irregular period and, if the period is present, the quantity is small. Usually the patient has given birth previously, followed by a long period of sterility, and then has a delayed, missed, or irregular menstruation. Absoluate sterility is not definitely associated with ectopic pregnancy, but relative sterility, especially the one child type, is a very significant point. A history of previous pelvic disease, such as congenital analogy, inflammation of the tube, intra-uterine instrumentation, intra-abdominal operation, especially some procedure for the cure of sterility, are of great importance, but a lack of such history should not influence a diagnosis against it.

Although it cannot be proven definitely and although I know of no authority supporting it, I am of the opinion, from the history of our cases, that many extra-uterine pregnancies are caused by the use of contraceptive measures. I mean that contraceptive measures are used during the first ten days after menstruation, and not used for the ten days or two weeks previous to the period. This violation of the physiologic laws of copulation, I believe, would render the lining mucous membrane of the uterus less receptive to normal gestation, and inhibit the usual activity of the cilia, occasionally causing the impregnated ovum to take the wrong course or remain stationary in the tube.

Pain is the chief and most constant symptom. It is sudden, intense and of a cramp-like or colicky character, usually localized in the lower abdomen to one side, although at times the pain may be higher up in the region of the

*Read by title at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

gall-bladder. In extra-peritoneal rupture, the pain varies according to the amount of blood lost. At times when the pain strikes a patient the shock is so profound that there is a complete collapse, so much so that patients have been known to fall on the street. A decidua is expelled upon the death of the ovum after rupture. The decidua is expelled in piece meal or in a whole decidual mass or cast, with the characteristic bloody discharge that does not readily clot. This is also one of the chief diagnostic points. The pulse is small, frequent or hardly palpable, its degree depending upon the amount of blood lost and upon the extent of shock. There is a decided drop in blood pressure, the patient becomes anemic, the red blood count comes down, a leukocytosis develops, the hemoglobin index falls, there is mental disturbance, inability to arise and assume the erect posture, the patient is pale, has fainting spells, dyspnea and cold sweats. There is usually subnormal temperature early during shock and later a slight temperature elevation. The lower part of the abdomen is rigid and very sensitive to palpation. We may find the cervix is sensitive to motion, pain upon defecation, lower abdominal dullness on percussion, the usual breast phenomena and other symptoms common to early pregnancy.

The above picture should lead to a careful investigation. Upon pelvic examination the parts are found blue, congested, and the uterus, due to the absence of the growing ovum, is not much changed in consistency or shape, although it is enlarged and there is usually a slight softening of the cervix. There is great pain on movement of the cervix, due to the peritoneal irritation, caused by the blood which gravitates into the cul-de-sac. A vaginal examination will sometimes reveal a soft boggy enlargement or blood crepitus in the abdomen, or a hematoma in the fold of the broad ligament.

Cullen pointed out that the dark color of the umbilicus is at times a sign of ectopic pregnancy. Since that time Novak says that several writers have noted this sign, and found it of great help in making a diagnosis. Dr. Jackson has made a suggestion for the determination of Cullen's sign when it is apparently absent, that of placing the patient in a dark room, and throwing the light of an ordinary flash light on the umbilicus, which he claims will bring out the greenish blue color.

Schuman describes another class of symptoms, which he calls the stenic variety, and is concurred in by Cresler and others, who call them silent cases of extra-uterine pregnancy. Here we do not have collapse, pallor, weak pulse or other signs of hemorrhage: but the diagnosis has to be determined on the history, tenderness, distention of abdomen, especially on bimanual examination.

It must not be forgotten that tubal pregnancy may be double, recurrent or bilateral. A tubal pregnancy may co-exist with a uterine pregnancy. Of these Heineck says that the recurrent type is by far the most frequent, and that the recurrence is nearly always in the opposite tube.

Dr. Stuart McGuire, in a paper before the Southern Medical Association a few years ago, states that in a series of fifty cases there were six who had a recurrence in the opposite tube and were operated on by him the second time. He estimates that there were six other recurrences, who went elsewhere for treatment.

Shock with abdominal symptoms, in a woman capable of bearing children, should always create a suspicion of ectopic pregnancy. As soon as a diagnosis is made, the treatment is invariably surgical. The operation should be performed with as little anesthetic as possible. Always withhold stimulation until the bleeding points are tied off.

I would like to emphasize the following points:

1. Where there is any possibility of an extra-uterine pregnancy, obtain an accurate and complete history of the case.

2. There is usually a subnormal or no temperature during shock of the tragic stage, although temperature will develop later.

3. Discharge of the decidua without villi is a pathognomonic diagnostic point.

4. Never give stimulants until after ligature is secure around the bleeding points.

5. Extra-uterine pregnancy is more frequent than is generally believed.

6. Extra-uterine pregnancy is more probable, it appears, in women who for a week or so after menstruation, and for this period only, use contraceptive measures to prevent conception.

7. Immediate operation as soon as diagnosis is made. These cases usually recover if operated on early. These cases are usually fatal if left to nature.

REFERENCES.

Samuel, M. Diagnosis of Normal and Extra-Uterine Pregnancy and Ovarian Hematomas. Klin, Wchnschr. Feb. 5, 1923.

Brady, L. Clinical Study of Ectopic Pregnancy. Bull. Johns Hopkins Hosp., May, 1923.

Hayd, H. E. and Potter, I. W. Symptoms and Signs of Extra-Uterine Pregnancy at or Near Term, with Report of Two Cases, etc. Am. J. Obst. & Gynec. June, 1923.

Flaatau, W. S. Diagnosis of Extra-Uterine Pregnancy. Munchen med. Wchnschr. Sept. 23, 1921.

Jackson, F. H. Cullen's Sign in Ectopic Pregnancy. The Journal. Dec. 2, 1922, p. 1929.

Crisler, J. A. Diagnosis of Extra-Uterine Pregnancy. J. Tenn. Med. Assn. Dec., 1922.

King, E. L. Importance of History in Diagnosis of Tubal Pregnancy, New Orleans M. & S. J. Dec., 1922.

Palmer, D. W. An Unusual History of Ectopic Pregnancies. The Journal. March 19, 1921, p. 793.

McGuire, Stuart. The Profit and Loss Account of Modern Medicine.

Montgomery, E. E. Keen's Surgery.

De Lee. Principles and Practice of Obstetrics.

Ashton. Practice of Gynecology.

Amaral, Z. Bilateral Tubal Gestation, Laparotomy, Double Salpingectomy, Recovery. Gynec. & Obst. 1922, VI, 319, 321.

Jackson, F. H.: Cullen's Sign in Ectopic Pregnancy: A Suggestion for its Determination. Jour. A. M. A. 1922. LXXIX. 1929.

Ray, H. M. Primary Ovarian and Primary Abdominal Pregnancy; their Morphological Possibility. Surg., Gynec., and Obstet. 1921. XXXII. 437.

Foster, G. S.: A Case of Bilateral Tubal Pregnancy. Amer. Jour. Surg. 1920. XXXIV. 169.

Hirst, B. C.: Primary Abdominal Pregnancy. A Textbook of Obstetrics, 8th ed. W. B. Sounders Co. 1918. 408.

Hicks, H. T. A Case of Full Term Ectopic Gestation with Living Foetus. Brit. M. J. 1922. 1, 141.

Kelley, T. H. Ectopic Pregnancy: Internat. Clin. 1922. 32S:ii:17.

Polak, John Osborn. Observations on Ectopic Pregnancies. Amer. Jour. Obstet. & Gynec. 1921. 11, 280.

McIntyre, Donald. A Case of Interstitial Pregnancy (After Salpingo-Oophorectomy on the Same Side.) Jour. Obstet. & Gynec. of British Empire. 1922, XXIX, No. 2, 314.

Vertenbaker, Wm. Three Obstetrical Rarities, Delaware St. Med. Jour. 1921. XII., No. 4, 8.

Bull, H. R. Extra-Uterine Gestation, Colorado Medicine. 1922. XIX, 9.

Croft, E. O. Operation for Removal of Living Extra-Uterine Child at Full Term. The Lancet. 1922. 11, 380.

Fancher, H. L. Abdominal Pregnancy at Term. Report of Case. Jour. of Tenn. State Med. Assn. 1922. XV., 279.

O'Neill, B. J. A Case of Ectopic Pregnancy at Term with Living Child. Jour. A. M. A., 1923, LXXX, No. 13, 913.

Carstons, J. H.: Double Tubal Pregnancy. One Twins. Jour. A. M. A., 1920. LXXIV. 1518.

Burford, George. Simultaneous Ectopic Gestation in both Fallopian Tubes. Medical Press and Circular. 1905. LXXIX. 533.

Heineck, Aime Paul. Double, Recurrent and Bilateral Tubal Pregnancies. Medical Progress. 1918. XXXIV. 268.

Novak, Emil. Bluish Discoloration of the Umbilicus in the Diagnosis of Ruptured Extra-Uterine Pregnancy. Jour. A. M. A. 1922. 78. March 22nd.

Shaw, Henry N. Pregnancy Following Implantation of the Outer End of the Only Remaining Fallopian Tube into the Uterine Cornu after Resection of a Cornual Pregnancy. Johns Hopkins Hospital Bull., 1921. XXXII. September.

TUBERCULOUS AND NON-TUBERCULOUS COMPLICATIONS AT PINE CAMP SANATORIUM DURING THE YEAR 1922.*

By W. NELSON MERCER, M. D., Richmond, Va.
Director, Tuberculosis Division, Richmond Health Bureau.

The correct evaluation of statistics lies in a thorough understanding of the conditions pertaining to the subject under consideration. Therefore, I will describe briefly the sources and the types of patients admitted to and under treatment in Pine Camp Sanatorium of Richmond, Va., during the year 1922.

Pine Camp Sanatorium is the municipal tuberculosis hospital operated by the Department of Public Welfare of Richmond for resident white tuberculous patients who are unable to afford the expense of sanatorium treatment in other institutions. However, Richmonders who have been to various sanatoria and are unable to further pay their way in them are frequently admitted to Pine Camp, if proven to be worthy cases still in need of hospitalization.

The chief sources of admission are (1) from the free City Tuberculosis Clinic, (2) from consultations by the Director of the Tuberculous Division with practitioners in the city, and (3) by direct applications of tuberculous patients who reside in the city or for the time are under treatment in other sanatoria. No discrimination is made regarding the clinical classification of applicants, provided they are eligible socially and financially and are in need of sanatorium treatment. Due to this fact the percentage of far advanced cases admitted to Pine Camp is higher than prevails in other Virginia sanatoria, which fact should be remembered when comparing the tables of complications.

With a capacity of thirty-six, ninety-two patients were treated at Pine Camp during the year 1922, their stay ranging from two days to twelve months and, although this number is comparatively small, we may derive some-

*Read at fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

thing of benefit from the results obtained.

Upon comparison of the three tables, it is evident that the vast majority of deaths occurred among those patients who had tuberculous complications of an extreme nature. Six of the total of twelve fatal cases had laryngeal involvement in an advanced stage. Most of the laryngeal cases were admitted with this complication and had advanced pulmonary tuberculosis as well. Some came to Pine Camp as a last resort—in extremis.

An entirely different picture is presented by the non-tuberculous complications, the only death among these being due to a post-operative carcinoma of the stomach, resulting in inanition.

It will be noticed that the proportion of improvement is greater among the tuberculous than among the non-tuberculous complications, which may be accounted for by their yielding more readily to treatment, if this is begun when they first appear. Ten of the twenty-six tuberculous complications which improved were benefited by surgical intervention. Five of the eleven non-tuberculous complications which improved were likewise helped by prompt surgical treatment.

Those complications which remained unimproved yielded to no treatment whatever, although they were not progressive in every instance but were chronic in character.

TABLE No. 1.
PINE CAMP SANATORIUM.
Tuberculous Complications, 1922.

Complication	Total	Improved	Unimproved	Died
Tuberculosis of Larynx*	13	5	2	6
Pulmonary Hemorrhage*	12	10	0	2
Ischio-rectal Abscess (Post-op. 2)*	4	3	1	0
Hydropneumothorax (Op.)*	3	3	0	0
Pyopneumothorax (Op.)*	2	1	1	0
Peritonitis (Op.)	1	1	0	0
Tuberculosis of Metatarsal Bones (Op.)	1	1	0	0
Tuberculosis of Hip Joint (Post-Op. 1)	2	2	0	0
Enteritis	2	0	2	0
Meningitis	2	0	0	2
Total	42	26	6	10

*Multiple Complications.

Table 1 gives the tuberculous complications which manifested themselves in such a manner as to render them worthy of special care and treatment. Those marked with a * occurred as multiple complications in individual patients, occasionally two or three in the same case. When a fatal termination resulted, the principal causative factor is noted in that column.

Five of the thirteen cases of laryngeal tuberculosis were benefited by treatment, some of which were entirely cured, while two showed no improvement, and six died.

Ten of the twelve pulmonary hemorrhage cases improved or entirely healed. Two bilateral far advanced patients died with terminal bleeding.

Two of the ischio-rectal abscesses had been previously operated upon, and three of the four improved with routine treatment. One was unimproved.

Hydropneumothorax complicating artificial pneumothorax treatment required repeated aspiration in three cases, the fluid entirely disappearing.

Pyopneumothorax complicated two artificial pneumothorax patients in one of whom the pus disappeared after repeated aspirations, but in the other a small amount remained.

The two cases of enteritis were not benefited by several methods of treatment, probably due to their long standing and the far advanced condition of the lungs.

Meningitis developed rapidly in one patient, the first symptom being diplopia, while in the other the usual headache preceded other symptoms of a terminal nature. In both cases the lung pathology was far advanced.

Acute tuberculosis of the metatarsal bones occurred in one case of moderately advanced pulmonary disease and, after prompt removal of the two bones involved under gas-oxygen anesthesia, the patient made an uneventful recovery and has worked steadily since discharge as an arrested case.

Both cases of hip joint disease deserve comment as one patient is 26 years old and had been in a cast and brace for years, only within the past year being allowed to leave off the cast and use crutches. He now walks well without crutches or cane. The other case gave a history of pulmonary tuberculosis and traumatism in a street car accident ten years ago, which necessitated resection of the head of the femur involved and fixation of the joint. The sinus which developed after operation has been closed for several years, and the patient gets around remarkably well with a cane. The pul-

monary condition of both cases is apparently arrested, one having resumed his former occupation of clerk, and the other will soon be discharged.

Tuberculous peritonitis developed in one patient with typical symptoms and signs of acute appendicitis but, due to the advanced condition of the lungs, operation was considered a bad risk. However, the nausea and vomiting progressed with excessive abdominal pain localized in the right lower quadrant which necessitated surgical intervention. An exploratory laparotomy was done under local and gas-oxygen anesthesia. Some free fluid, enlarged glands, and small tubercles lining the peritoneum were found but the appendix was normal. The fluid was removed and the wound closed, the patient's temperature came to normal, his indigestion disappeared, and since then he has had no symptoms of abdominal pathology. He was discharged to his home in the suburbs of Richmond much improved.

TABLE No. 2.

PINE CAMP SANATORIUM.

Non-Tuberculous Complications, 1922.

Complication	Total	Improved	Unimproved	Died
Nephritis Chronic Interstitial (Op. 1)	6	3	3	0
Pelvic Inflammation (Op. 3)	4	4	0	0
Diabetes Mellitus	2	2	0	0
Carcinoma of Stomach (Post-op.)	1	0	0	1
Valvular Heart Disease	1	0	1	0
Tabes Dorsalis	1	0	1	0
Psychosis	1	0	1	0
Renal Calculus	1	1	0	0
Hemiplegia (Old)	1	0	1	0
Hypopituitarism	1	0	1	0
Intestinal Obstruction Partial (Post-op.)	1	0	1	0
Cataract, One Eye	1	0	1	0
Pterygium (Op.)	1	1	0	0
Total	22	11	10	1

Among the non-tuberculous complications (Table 2) which required operative intervention, three were women in which the signs and symptoms of pelvic inflammation demanded correction. The stage of disease in the lungs varied from early to moderately advanced and in all three cases gas-oxygen anesthesia was employed with good results.

The one case of renal calculus was cured by dislodging and passing the stone during catheterization.

The pterygium of one eye was removed under local anesthesia.

In the fatal case of carcinoma of the stomach (pylorus), this was discovered during a previous operation for suspected gastric ulcer, after which the patient became gradually worse and finally died due to inability to retain any nourishment. His pulmonary condition was far advanced.

The one case of partial intestinal obstruction following a former appendectomy presented symptoms of chronic constipation and periodic attacks of vomiting with abdominal pain. Due to her refusal to allow a laparotomy, the cause was not removed.

The treatment of the nephritic and diabetic patients was dietetic with the usual routine for all tuberculous cases. All of these improved except three of the nephritic cases which remained stationary. One of the nephritics required numerous abdominal aspirations of large amounts of ascitic fluid which finally disappeared and has not returned after six months.

TABLE No. 3.

PINE CAMP SANATORIUM.

Summary of Pulmonary Tuberculosis Cases With and Without Complications, 1922.

Complication	Total	Improved	Unimproved	Died
Tuberculous	42	26	6	10
Non-tuberculous	22	11	10	1
No Complication	36	34	1	1
Total	100	71	17	12

Of the thirty-six patients who apparently had no complications (Table 3), thirty-four improved under routine sanatorium treatment, and of these nine suitable cases were benefited or arrested by artificial pneumothorax treatment.

Only one uncomplicated case remained unimproved, and one died.

CONCLUSIONS

1. Tuberculous complications are usually of more serious prognostic significance than non-tuberculous.

2. Early recognition of both tuberculous and non-tuberculous complications with prompt medical treatment or surgical intervention offers the greatest prospect of cure or improvement.

3. The presence of pulmonary tuberculosis in any stage should not prevent surgical intervention under local or gas-oxygen anesthesia for the correction of a grave complication.

4. Complications of any nature should not be regarded as hopeless until every known method of treatment has failed.

Room 409, City Hall.

DISCUSSION.

DR. WYNDHAM B. BLANTON, Richmond: Dr. Mercer's paper is very interesting. The complications of tuberculosis are very important, and I believe clinically are often overlooked. In connection with this, will say that four or five years ago I saw a thousand or more cases of pulmonary tuberculosis. Of the seven hundred (700) autopsies studied, 37% presented intestinal infection, 24% glandular tuberculosis; 15% tuberculosis of the spleen and liver; the peritoneum and pericardium come next with something like 5%.

DR. W. NELSON MERCER, Richmond: The complications noted in this paper were clinically demonstrable in living patients and do not include post-mortem findings. Dr. Blanton's autopsy statistics serve to prove the frequency and seriousness of tuberculous complications, which should be recognized early and treated accordingly.

TWO SHORT PUBLIC HEALTH COURSES AT THE UNIVERSITY OF VIRGINIA.*

By HARRY T. MARSHALL, M. D., University, Va.
Professor of Pathology, and Member of State Board of Health.

During the last twenty or thirty years, the number of people engaged in caring for the public health has increased from a handful to the proportions of a small army. Within the same period, the responsibilities of public health officials have become more diversified. In the public health department of a large modern city or of a state, there may be twenty or more different lines of work carried by the department force. Some officials will be engrossed in matters of organization and administration, others in educational matters and publicity, others in problems of engineering, others in highly specialized bacteriological, or statistical, or nutritional fields. In addition, there will be subdivisions devoted to the special public health problems of tuberculosis; of venereal diseases; of infant welfare; of school inspector; of water; milk; foods; of sewage disposal. This incomplete list serves to indicate that there is considerable diversity of occupation to be found on a public health force. Within the subdivisions there will be still further differentiation. As a rule, a large, well developed public health staff will include one, or several, highly trained officials; a number of officers expertly trained along one or more highly technical lines; a number of doctors who have picked up some practical working knowledge of public health matters, and who are chiefly engaged in field work; public health nurses, sanitary inspectors, etc. In this state, the chiefs of the three great tuberculosis hospitals and their staffs are also public health officials.

Where do public health officials come from? Where and how are men and women trained to become public health officials? Several of the large universities have given at least a partial answer to this question, by offering courses which prepare the graduate for leadership in the public health movement. Another partial answer has been worked out in the health departments themselves, where medical graduates, and non-medical laymen are received, given intensive practical training, like apprentices, and taken over as public health agents.

In the construction of the university courses, the directors have been guided by those ideals of scholarly thoroughness which underlie the arrangement of university courses for students of engineering, or of medicine. The students are carried through courses extending, usually, over several years, designed to give a solid grounding in the sciences relating to their chosen profession. They must acquire specific knowledge of at least the outlines of those great fields into which their professional work will carry them. They must develop a reasonable degree of technical proficiency through laboratory or field work.

It seems only reasonable to assume that graduates in public health who have spent several years in preparation, will be qualified to work into commanding positions in the various public health services of cities, states and the nation, but only in rare cases will they be content to accept humble and poorly paid positions in small towns and country districts. Now the question may be asked, "What part can a state university play in training students for these humbler positions?" A consideration of the development of public health in Virginia may be of value in answering this question.

It is only some fifteen years ago that Vir-

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

ginia began to apply modern public health methods to the State on a wide scale. At the time the State Board of Health was reorganized in 1908, there was practically no functioning health department either in the State or in the counties and, though Richmond and Norfolk had, already, young and active health offices, the other cities and towns had moved little or not at all along this line. In the fifteen years which have elapsed since the inauguration of the new State Board of Health, nearly one-half (forty or more), of Virginia's one hundred counties, and several of the cities and towns have established local health work on a whole time basis, some in an elementary way, others more elaborately. In some communities there may be only a sanitary inspector, or only a nurse, and from this minimum there will be found more and more complete organizations up to those of the large cities. Fortunately, the State law vests with the State Board of Health control over the smaller, undeveloped local health units, and the State Health Board, through professional and financial backing and direct supervision, exercises, in fact, a very real directorship over the local health work.

The establishment of health units by counties is a relatively new development, hardly any of the modern health units being over six or eight years old. They have been started as a rule through the efforts of the Commissioner of Health and his assistants acting in conjunction with groups of citizens in the locality to be developed. It is usually not easy to secure a large amount of money for such an undertaking, and in not a few rural communities there may be active opposition to, or at least distrust of the proposed innovation. It, therefore, happens that most of the county health units have humble beginnings, the idea of the State authorities being that any work accomplished will carry its own story to the county, and lead to expansion of the local unit. This theory is proving true in practice, and, in addition, the success of the county health units is proving to be a distinct incentive to some of the more tardy counties to follow the example of their neighbors. All in all, the development of local health units in counties and towns is a movement which is advancing with increasing momentum.

The progress of this movement for the building up of small local health units carries with it an increasing demand for public health agents who will know at least how to care for the most urgent public health needs of the community, but who can be obtained for a modest salary. The position will not appeal to the highly trained public health graduate. Officers for these positions have been found hitherto largely by chance; at times when an officer is needed, an untrained man is drilled by the State health authorities until he learns enough to look after rural sanitation and a few other fundamental matters. He is then placed at work,—it may be, actually in charge of a rural unit, if he is a doctor,—and is encouraged to push forward, learning as he goes, under the scrutinizing supervision of the State health authorities. He is kept in close touch, through telephone, letters and visits, with the expert staff of the State Board of Health, so that he can secure advice or assistance from the sanitarians, engineers, bacteriologists or others in the central office. While this method of training has sufficed to meet most of the needs, up to the present, the demand for health officers is increasing at a rate that makes it advisable to plan for a stabilized training for officers of the types most needed at present in Virginia,—especially in the counties and small towns. It seems that the public health development in Virginia, with a central consulting staff supervising and advising the field workers in charge of small rural units, at the same time encourages counties and towns to engage in local public health work, and, on the other hand, creates a special question in regard to the education of public health workers to meet this demand.

A little over a year ago an opportunity arose for the University of Virginia to take a share in the training of health workers for the State. An active rural health unit, functioning successfully for two years in Albemarle County was enlarged so as to have control in public health matters over Charlottesville and the University as well as the county. The director of this unit is a member of the University of Virginia teaching staff and, in addition to lecturing, he can send his pupils to gain first hand knowledge of health problems in field work in city and county. With this organization as a foundation, the authorities at the University, after advising with the Commissioner of Health, Dr. Williams,* and his assistant, Dr. Flannagan, decided that the training

most needed to meet the present State needs includes, first, the practical, intensive training of medical graduates in the fundamentals of rural public health: and, second, the training of sanitary inspectors.

Two courses have, accordingly, been designed: a twelve weeks' course for medical graduates, and a ten weeks' course for inspectors. From our experience last session, we are inclined to believe that this course meets a growing need in the State, and that training of this type will be necessary for ten or twenty years, or until public opinion is ready for more highly organized, and more expensive rural units. In our courses, the student learns to look after rural sanitation: water supplies: school inspection, with follow-up work and clinics: maternity and infant welfare work; and public health office work.

The courses given last year covered, essentially, the subjects outlined above. We expect to mould the course in the future to meet new needs as they may develop. At present we consider it advisable to include some lectures on medical, public health and laboratory subjects, and to lay more stress on contact with the hospital and dispensary.

While we are aware that these courses are, educationally, far from ideal, we believe that organized training of this kind under university direction will ensure a more evenly trained product, and a greater supply of trained health agents, and we believe that in offering these courses we are fulfilling one of the obligations of a State university in meeting an educational need of the State. We recognize that the new courses are in the nature of an educational experiment, but it is our hope that, through control of these new courses, the University and the State Health authorities will be able to mould the education of public health agents, so as to meet the expanding needs of the State.

DISCUSSION.

DR. WM. S. KEISTER, Charlottesville: Just one word, especially as being Health Officer of Albemarle County and Charlottesville. The plan of the University is primarily to meet the State's needs, as Dr. Marshall expressed it, for trained health workers. It was with some timidity that we faced the public health proposition and started at the other end. The need is not for theoretical health officers, but rather for men who can meet the local needs. Some communities are not prepared for higher trained theoretical men; they do not want men trained in theory without practice. It is with this idea in view that they are trying to organize in the University, a course which provides more practice instead of so much theory. There is nothing against theory, but we need practical artisans in public health rather than higher trained experts. We trust that this course will be the means of meeting the needs of the State and possibly of the South. We feel that there is a great need and some agency should be developed to meet this need.

*It is a pleasure to acknowledge our indebtedness to Dr. Williams and Dr. Flannagan for their advice and assistance.

HANDICAPS TO PUBLIC HEALTH ADMINISTRATION.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.
Assistant Health Commissioner
and
Director Rural Health Work for Virginia.

INTRODUCTION.

A LARGE OPPORTUNITY.

At the outset I would like to challenge the thought and interest of the medical profession in the public health field as a career. I would particularly direct attention to the tremendous need for health service in the rural districts of the South and to the large opportunity furnished by this need for the use and development of all the qualities that make for leadership.

While the administration of a city health department is by no means a sinecure, I am in position to know that every qualification desirable in a city health officer must be more or less intensified in order to win distinguished success in the country districts. For, while principles are the same, to achieve results every method of disease control must be simplified and adapted to widely varying geographical, cultural and social conditions.

The handicaps of temperament, training or lack of experience that tend to hinder the work in town will be found to be even more of a hindrance in the country. If, therefore, what I have to say to you seems to unduly exalt country work, please be informed that it is to the most needed, and, in many respects, the most attractive public health task that my mind reverts. I even confess to a lively hope that some of you who hear me will feel impelled to accept the challenge to take up rural public health work, involving as it does the lives and well being of the most worth while folks on the American continent. I have heard of medical missionaries for foreign shores: no more devoted service to God or to man

*Read by title at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

(synonymous terms as we all know) is possible than bringing to malaria ridden, hookworm infested, typhoid fever and dysentery infected sections of our own Anglo-Saxon southern land the gospel of good health and the knowledge of how to secure it. For a sick body rarely houses a healthy soul.

Knowledge, Vision and Purpose.

The chief factor in success in any business or profession is a knowledge of it. The more knowledge of what you are doing and where you are endeavoring to go, the better initial equipment you have. This is axiomatic. But with the highest equipment in knowledge of public health principles and practice and with the keenest appreciation of all of the implications wrapped up in the preventive idea, there have been conspicuous failures in the administration of public health departments—failures, not total perhaps, because no well planned work based on knowledge and vision is ever a total failure, but disastrous defeat and at least temporary retirement from the field with all the discouragement and loss of prestige that goes with being licked. There is an even worse aspect to it than this: a defeat in the public health field of activity, as in battle, actually means unnecessary loss of life.

It is to the causes that go to make up such defeat and the means of avoidance of them that I address myself at this time, for, to my mind, the pursuit and practice of "Preventive Medicine" offers the opportunity, and successful public health administration a goal worthy of any man's aspiration.

Handicaps.

Given then knowledge, vision, purpose, and a fair measure of honesty and industry, what are the things to be overcome, avoided or guarded against in the administration of the public health? I would name four as perhaps the most important:

1. Lack of sympathy with people,
2. Over confidence,
3. Stubbornness,
4. Impatience.

Over against these, on the principle of overcoming evil with good, I would place these four:

1. Love for man as man independent of his creed or condition,
2. Humility,
3. A spirit of give and take (teachableness),
4. Patience, and a faith that tomorrow will bring the fruit of today's planting.

Lack of Sympathy.—If there is one thing that might be said to absolutely inhibit success in public health work at its present stage, it is *Lack of Sympathy* with and for people as they are, which carries with it the inability to put oneself in the place of the other fellow. The quality of sympathetic understanding, which may be translated as *love* of your fellowman applied, is, I fancy, largely a matter of temperament in many cases, but it is more often a matter of training. In this connection I would like to quote a few verses from one of the later poems of Kipling—*A Pilgrim's Way*:

1. I do not look for holy saints to help me on my way,
   Nor male or female devilkins to lead my steps astray,
   If these be added I rejoice, if not I shall not mind
   So long as I have leave and choice to meet my fellow kind,
   For as we come, and as we go—and deadly soon go we—
   The people, Lord—Thy people, are good enough for me!

2. Then I will honor pious men whose virtue shines so bright—
   (Tho' none are more amazed than I when I by chance do right),
   And I will pity foolish men for woe their sins have bred—
   (Tho' ninety-nine per cent of mine I brought on my own head)
   And, Amorite or Eremite or General Averagee
   The people, Lord—Thy people, are good enough for me!

3. And when men bore me overmuch, I will not shake mine ears
   Recalling many thousand such whom I have bored to tears.
   And when they labor to impress, I will not doubt nor scoff;
   Since I, myself, have done no less and sometimes pulled it off.
   For, as we are, and we are not, and we pretend to be,
   The people, Lord—Thy people, are good enough for me!

4. And when men do me random wrong, as oftentimes hath been,
   I will not cherish hate too long (my hands are none too clean).
   And when they do me random good, I will not feign surprise,

No more than those whom I have cheered by wayside charities.
But as we give and as we take, whate'er our takings be,
The people, Lord—Thy people, are good enough for me!

5. * * * * * * * *

6. Deliver me from every pride—the Middle, High and Low—
That bars me from a brother's side, whatever state he show.
And purge me from all heresies of thought and speech and pen
That bid me judge him otherwise than I am judged, Amen.
That I may sing of Crowd and King and road-borne Company,
That I may labor in my day, vocation and degree
To prove the same in deed and name and hold unshakenly
(Where'er I go, whate'er I know, whoe'er my neighbor be),
This single faith in Life and Death and all Eternity,
The people, Lord—Thy people, are good enough for me!

A man may be cold natured and yet by cultivating gentlemanly instincts and practicing courtesy to all and the discipline of listening to the other fellow and dexterity in trying to find a point of contact (even though it sometimes stretches the imagination beyond belief), or if this is impossible, the grace of silence—he may overcome and win success in the face of this natural handicap. Sympathy is a heart quality and may not be successfully simulated for long, but careful cultivation in this field, as in all others, brings fruit. Lack of sympathy is due to selfishness and the incurably selfish man or woman has no place in public health work, or in the practice of medicine for that matter.

Wordsworth says:

He whose eye is ever on himself doth look on *one the least of nature's works,*
One who might move the wise man to that scorn that wisdom deems unlawful ever,
Be wiser, thou! Instructed that true knowledge leads to love,
True dignity abides with him alone who in the silent hour of inward thought
Can still suspect and still revere himself in lowliness of heart.

Small men are not needed in the field of public health. The naturally sympathetic more easily succeed, but a large souled man will overcome handicaps of personality as he does those of knowledge by study and practice.

Over Confidence.—Another important thing to avoid is *Over Confidence. A lack* of confidence in oneself is a serious fault in an administrator, but to be *too cock-sure* and overweening in asserting one's superior knowledge is without doubt fatal to popularity, and few people weigh enough mentally to carry such an attitude successfully. I use the word popularity advisedly for the most important single thing that a health officer must do is to establish himself and his work in the public confidence, and a lack of humility at times will undo the effect of much conscientious work. Nobody ever personally likes a conceited man. His habitual attitude towards others thrusts them into the background and injures their self-esteem. He will be tolerated if he has ability, but will be gradually shut out from the social intercourse that gives the human contacts so necessary to sympathetic co-operation on the part of the public.

Teachableness, adaptability, and deference to age, custom, experience, and perhaps, prejudice, are traits that will go a long way towards smoothing the pathway which, under the most favorable conditions now existing, will still be thorny and rough. Get a clear view of the way to go and move steadily and with confidence forward, but remember always that "pride goeth before destruction and the haughty spirit before a fall," and—watch your step.

Stubbornness.—Another stumbling block in the way of successful public health administration is *Stubbornness* in the administrator. In every community there are so many unmistakable public health needs, so many flagrant departures from proper sanitary practice, and often so many actual disease breeding conditions in evidence, that the new health officer in a crusading spirit is greatly tempted to make his program for relief on the basis of these needs and then stubbornly "hew to the line, without fear or favor." I grant that on the face of it, pursuing such a course would seem to have much to commend it, but in most instances to do so means that the health officer will have to play a lone hand and thus rarely "gets by" with it.

A city or county government that appoints him and the organizations that have probably forced the government to act in health matters will loudly vociferate when he takes office that this hewing to the line is the thing to do, but they do not mean it for when

criticisms of the health department come by reason of what seem iconoclastic tendencies, neither of these groups can be depended upon to uphold the health officer. If he has consulted with them beforehand and adjusted his activities to the possible rather than to the eminently desirable, and has gained their approval, either tacit or expressed, to a course of action, he has cleared the decks and may then proceed with reasonable assurance of support. To some men such consultation with non-professional and untrained men and women is repugnant and it is very difficult for them to admit that the compromises often suggested have any merit whatsoever, and so they avoid embarrassing themselves with conferences and in their pride of opinion forge ahead. Few health officers with such a stubborn and unyielding spirit survive their first term in office. Far be it from me to suggest that having once decided upon a desirable course the health officer should give in when criticism develops: he would never get anywhere in that case. Having made his plans after due consideration, he should be firm in purpose and bold in action without truculence. The study of each large procedure contemplated and the gaining of as complete a knowledge as possible of the elements of the problem from all angles, especially from that of the public (which presumably has become more or less adjusted to present conditions), is absolutely essential. If a board of health made up of people such as compose our town councils, our boards of supervisors, and our welfare committees, definitely oppose a contemplated course of action, it is seriously to be questioned whether the health officer can force the procedure, however desirable it may be, on the public at large. It may be wise to wait for a more propitious time, and turn his attention to the multifarious health activities that will command support. Many splendidly conceived programs are wrecked because it has not been possible to consummate them in the short term of a headstrong and stubborn health officer.

Impatience.—And this brings me to the fourth common obstacle to successful administration—*Impatience.* Each administrator of health should realize that he has entered upon a campaign, not simply a battle; he must fully appreciate that there will be many advances and many retreats, many sieges, much sapping and mining and propaganda work. The enemy is entrenched behind custom and prejudice and careful planning is necessary to dislodge him. Before attacking, all available forces should be at hand, and the heaviest artillery in place. An ill-advised battle involving a frontal attack may mean the loss of the commander-in-chief, perhaps, a very heavy price to pay for impatience. The preventive principle can afford to wait. It clearly commands the future, so impatience and anger or ridicule directed at people who believe differently and who defend the sacredness of the ancestral dunghill or are sentimental over a fragrant draught from the old oaken bucket are unnecessary from a man who has already taught the children of the community to know the birthplace and the dangers of the housefly and has illustrated the handwashing possibilities of a wet well-rope. This teaching, like chickens, will come home to roost: just give it time, for education and time are on the side of prevention and Johnny and Mary grown up will take care of the manure pile and put a tight pump in the well if the old folks do not.

I would not have you get the idea that I advocate a waiting game exclusively, the health officer who is worth his salt is working all the time, for there is always plenty to do, but I would sound a warning against impatience and the execution of hastily conceived plans for reaching important objectives. Prepare for your fight and then go in to win with every ounce that is in you.

Medical Self-Consciousness.—In addition to the foregoing handicaps to successful administration of public health work, I would call attention to another which is a little difficult to describe in a word, but which may be defined as *Medical Self-Consciousness.* The whole trend of the training of a doctor and of his experience in the practice of his profession is toward developing this self-consciousness. The ethics of the profession forbid advertisement of his wares or work and the right-thinking doctor is, therefore, the more acutely sensitive to lapses on the part of others less scrupulous or less careful than he. This reacts on him and is apt to beget in him a species of self-righteousness.

The sense of his own importance is constantly enhanced by the reception without question on the part of his patients of his dicta and his orders in respect to their ailments. He is flattered by them and the doctor whom he

supersedes is damned, and all the littlenesses of human nature are in parade before him. It is not to be wondered at that he often becomes puffed up, self-centered and non-co-operative with his fellows and goes to the extreme in his demands upon them. This attitude along with the fundamental medical aim, the healing of the individual sick, is at the opposite end of the pole from the aims and practice of public health, and, however admirable it may be in part, it stands in the way of progress in public health administration.

Distinctions

The public health is paramount: private aims, personal feelings, dignity, tradition, and custom must retire in the face of public peril: i. e., pestilence or the threat of pestilence. The practicing physician is distinctly a private personage and his function is private. The well-being of the individual is his concern and the ills of his patrons are the business of no one but himself and them, except, in so far as the law and the public weal impose duties upon him in relation to certain of his cases. He is in fact the better doctor by reason of this personal attitude. It is the other way about with the public health officer. His business is public in every sense of the word, the individual counts for little with him, and he has nothing personally to do with treatment, though he does indeed at times bring to doctors and specialists the opportunity for great health service. His concern is not with the individual sick except as that individual is a menace to others. He will at times shut the sick one away from contact with his fellows without regard to what the ill person's feelings or his family's feelings may be in relation to the action. It is the protection of the public that engages his attention and no private viewpoint, whether of self or of the sick one, has any proper standing with him in his official capacity. (Even in this, however, he should not neglect to be human). Medical self-consciousness, therefore, must go to the scrap heap when the doctor becomes a public health officer.

Publicity

The public must be fully informed as to what he proposes to do and be systematically apprised in detail of the successive steps taken in reaching the goal. The aid of everyone must be invoked in carrying out his purposes. the department of which he is the head must, if possible, be made a household word, and the health officer must not fear to see his name paraded in the public prints. So long as the work for which he stands progresses and the rate of sickness and of death is steadily decreasing, considerations of dignity or of sensitiveness must be put aside.

Single Mindedness

And this brings me to the last point I wish to make. Successful public health administration demands a whole-hearted service. Either be a doctor or be a health officer. Do not try to be both at one and the same time. It cannot successfully be done; such an attempt will only lower the public health standard in your community, bring you into conflict with your professional brethren and in the end injure both interests for which you are attempting to stand. The profession of medicine offers a wide and enormously important field for the highest sort of service to humanity. The men who have won the heights in this, as in all other departments of human endeavor where social values are the measure of progress, are those who by their painstaking efforts and epoch-making discoveries freely given to mankind have brought millions within the circle of their benefactions.

The profession of Public Health offers, in my judgment, an even wider field for helpfulness to mankind. It takes the discoveries of science and translates them to the people at large in terms of health and life. Scientific truth shut within laboratory walls or within the comparatively small circle of even a great physician's contact means little for humanity. The public health officer with the service he creates and administers puts meaning and force into facts which otherwise would never, however important they are, find common application.

These two professions must go hand in hand: one is complementary to the other. If they ever seem to be antagonistic, if ever the physician observing the encroachments made by public health practice upon the formerly enlarging boundaries of his field of endeavor is tempted to place obstruction in the way, let him remember that he is but observing the growth of his own offspring and, as a father, his duty is to guide him, but also to speed him on. Then as disease diminishes and the dream

of the founders of modern medicine becomes an actuality, he can take this unction to his soul that to him and to him alone in the last analysis is due the consummation—a cleaner, healthier, and a happier world.

THE VALUE OF DIPHTHERIA TOXIN-ANTITOXIN IN RURAL COMMUNITIES.*

By WILLIAM S. KEISTER, M. D., Charlottesville, Va.
Director, Joint Health Department of Charlottesville, Albemarle County and the University of Virginia; Health Officer of Charlottesville.

I wish to thank you for the honor of being permitted to appear before you and discuss with you briefly some of the aspects of the value of diphtheria toxin-antitoxin in rural communities.

Although we now know the cause of diphtheria, its method of transmission, and its means of treatment and prevention, and have a test to determine one's susceptibility to it, yet much remains to be done before it is properly controlled. The general public must learn the importance of calling in the doctor as soon as suspicious symptoms appear, and cases of "sore throat" must not be regarded too lightly. The physicians, on the other hand, should give antitoxin promptly and when in doubt. The use of toxin-antitoxin, especially for children under school age, will be the means of producing a diphtheria-immune population in a few years, if taken advantage of by the general public.

This disease has been known since early times as accounts of it seem to have been mentioned in the Babylonian Talmud, and the Greeks believed it came from Egypt long before the time of Hippocrates. It was not until the years 1883 and 1884, however, that Klebs and Loeffler discovered the causative organism. The next great discovery in this disease came when Von Behring gave to the world diphtheria antitoxin. Although it was discovered in 1890, it did not come into active use until 1895. The influence of this discovery upon the death rate may be shown by the following results. The death rate in 1879-80 was 112.6 per 100,000; 1889-90, 97.8; and in 1899 it dropped to 45.2 and in 1918 to 13.8. In 1911 Schick published the results of his intracutaneous test and in 1913 demonstrated its application as a practical test for immunity in the presence of exposure and gave simple means of testing for antitoxic immunity before and at intervals after injections of antitoxin.

"Von Behring on May 8, 1923, reported the early results of the injections of neutralized toxin in a small number of persons," but "he did not originate the mixture nor establish the fact that those who had no antitoxin, develop it." It remained for Park and his associates of the Bureau of Laboratories of the New York City Health Department late in 1913 to demonstrate the practical use of toxin-antitoxin injections controlled by the Schick test for the immunizing of children against diphtheria, and they "established the facts that the procedure was harmless and that after three injections about eighty per cent of those individuals possessing no antitoxin or insufficient antitoxin to protect from diphtheria, developed immunity."

In an article on "The Control of Diphtheria," by Drs. Wm. H. Park, M. C. Schroder and Abraham Zingher, of the New York City Health Department, which was read at a meeting of the American Public Health Association in Cleveland in 1922, the following very significant statement was made, which shows the need for some agent other than antitoxin to confer an active immunity upon the general population: "The fact that the improvement which continued for many years after the introduction of antitoxin has ceased and that in fact a few years ago diphtheria began to increase slowly in the United States made us appreciate that we had reached about the limit of what we could do with the old measures. It made us think seriously of using active immunization. This was with the hope of rendering the population permanently immune rather than of waiting for cases to develop and then trying to cure them and to prevent the further spread of the contagion." "Owing to the fact that diphtheria antitoxin is not a product of human cells but is made by the cells of the horse, it disappears gradually after injection from the human body, so that at sometime between two and four weeks, the antitoxin is dissipated and the immunity disappears." "Antitoxin has been most successfully used as a preventive in those who are in direct contact with cases of diphtheria, such as children in a family in which diphtheria has developed, or in institutions in which an out-

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

break of diphtheria has occurred. The only precaution necessary is not to give antitoxin as a preventive to children showing physical characteristics of status lymphaticus or giving a history of having had attacks of asthma."

According to the above observers, eighty to eighty-five per cent of deaths from diphtheria occur in children under five years of age. The United States census reports for the registration area for the years 1910 to 1914 show that 62.2 per cent of deaths from diphtheria, 95.2 per cent whooping cough, 80.6 per cent measles and 53.9 per cent scarlet fever occur under five years of age. Are not the above figures sufficient evidence to cause us to use every means to protect the dear little ones from these diseases? Unfortunately we have no adequate means of protecting them from the last three diseases but, by using diphtheria toxin-antitoxin during this early age period, many lives can be saved and a diphtheria-immune population produced. Park and his associates found in a large number of persons who were given three injections of toxin-antitoxin that "about eighty per cent of those individuals possessing no antitoxin or insufficient antitoxin to protect from diphtheria developed immunity." They also found that, with few exceptions, they retained the immunity over a period of six and one-half years. Many observers are inclined to feel that the immunity produced is permanent, at least observations of a large number of persons inoculated would indicate it. During two years in New York City since the use of toxin-antitoxin, the number of cases of diphtheria diminished twenty per cent and the death rate decreased from twenty to sixteen per 100,000. No doubt all the credit cannot be given to toxin-antitoxin but must be shared with the plain antitoxin which is now more generally used. In a comparison of 90,000 children inoculated with toxin-antitoxin and subsequently Schick tested, with 90,000 children who received no protection, it was found by Park that four times as many children developed diphtheria among the control cases as among the tested cases, although there were only fourteen cases of diphtheria among the tested children and some of these did not take the full series of three inoculations. It would seem that all Schick positive cases may become negative if a sufficient number of series of inoculations are taken. There are very few positive after one complete series of inoculations, and it is rare to have a positive after the second series. Before six months of age the child usually has an immunity received from its mother, but Park considers it advisable to immunize all children between six months and six years of age with three injections of toxin-antitoxin, irrespective of the results of the Schick test. After six years of age (or even before), most workers give the preliminary Schick test (especially in urban communities), and later immunize the positive cases. It is advisable, where possible, to do a Schick test on all immunized persons in three months to a year or more after the toxin-antitoxin injections to see if the immunity is present. If the test is positive, another series of injections should be given. The toxin-antitoxin injections are given in a series of three inoculations a week apart, though it is permissible to give the first inoculation along with the Schick test.

In carrying out this work in rural communities, the problems met with are somewhat different from those of cities. Some of the difficulties met with in the country are: 1. Difficulties of transportation over poor road frequently and for long distances and often in bad weather, which make it necessary to make as few trips to a single school as possible. 2. Indifference of the public toward all public health measures, especially something new, and lack of sufficient co-operation, particularly when there is no imminent danger of contracting diphtheria. 3. Ignorance regarding disease and the use of sera, etc., and the difficulty in explaining the value of the Schick test and the use of toxin-antitoxin, and 4. The fear of local reactions as a result of the treatment. It is largely because of the above difficulties that we do not feel justified in Albemarle County in insisting upon a preliminary Schick test, even though such a procedure may be desirable and more scientific. Yet we feel that there is no contraindication to the use of toxin-antitoxin for everyone and can see no real reason why everyone desiring it should not receive it, even though some may already be immune. The writer has advocated its use by the physicians of the county since 1920, but it is only in the past year or so that it has been used extensively. Our own experience with it covers a period of nearly two years. During 1922 we gave 2,476 injections and in 1923 to date 294 injections making a total of 2,770 injections,

and without a single serious complication. At first the preparation used frequently gave some rather strong local reactions, which were temporary, especially in older children, but in the case of the new, less toxic preparation, the reaction has been practically nil. The latter result has aided greatly in securing the confidence of the children and carrying on the work. Each c.c. of the original preparation contained 3L + doses (120 lethal doses) of toxin and 3.5 units of antitoxin. The new preparation is made by adding ¾ of a unit of antitoxin to 1L + dose (40 lethal doses) of toxin, and each c.c. contains 1/10L + dose of toxin. In the case of either preparation, the dose is 1 c.c. for all persons over one year of age and ½ c.c. for those under a year. The local reactions when present are due to the autolyzed bacillus substance (protein), and the new preparation eliminates most of this. As a public health measure, the writer feels that the use of diphtheria toxin-antitoxin at the present time is even more valuable as a life saver and in the prevention of disease than the vaccination against smallpox, notwithstanding the increase in recent years in the prevalence of the latter.

To summarize briefly:1. Diphtheria is a disease about which we know the cause, method of transmission, means of treatment and prevention and have a test to determine individual susceptibility, and yet the morbidity and mortality rates are entirely too high, largely due to (a) the ignorance of the public, and delay in sending for the doctor, (b) delay on the part of the physician in using antitoxin and in sufficient amounts and (c) serious complications and sequelae.

2. Antitoxin should always be used as a therapeutic measure when in doubt. It lowered the death rate from 112.6 per 100,000 in 1879-80 to 13.8 in 1918.

3. The death rate from diphtheria under five years, in 1910-1914, was 62.2 per cent of the total deaths from this cause in the United States. This is the period of election for the use of toxin-antitoxin, although the schools are more accessible for this work.

4. There are no contraindications to the use of toxin-antitoxin, and the protection derived from it appears to be permanent. It is now possible to bring up a diphtheria-immune population.

5. The writer considers it inadvisable to give the preliminary Schick test in rural communities, as he does not feel that the advantages to be gained overcome the disadvantages.

6. The local reaction has largely been eliminated by the use of the new preparation.

Discussion.

Dr. P. K. Graybill, Fincastle: I would like to ask Dr. Keister a few questions. I understand it takes from eight to twelve weeks to produce immunity. Suppose in that interval a child develops diphtheria, would toxin-antitoxin tend to lighten the case and prevent complications?

If a teacher in a primary grade develops diphtheria during school, should the pupils in that grade be given immunizing doses of antitoxin or toxin-antitoxin?

Dr. M. Pierce Rucker, Richmond: Dr. Keister's statistics about mortality in young children confirm my opinion that obstetrics is the most important branch of medicine. The only way you can better these figures is for the obstetrician to take a hand. I have been in the habit of giving my patients weight cards. On the bottom of these cards I have printed: "Vaccinate child against smallpox at three months. Immunize against diphtheria at eight months."

Dr. R. L. Page, Batesville: In connection with Dr. Keister's paper, I wish to report the results of the use of toxin-antitoxin in Miller School. Assisting Dr. Keister, we gave three hundred injections. I am glad to report that there has not been a single case of diphtheria in that institution in the older children—no signs at all. Usually before this, we had several cases in the Fall and Winter, but since then we have had none. I am very much pleased with results.

Dr. W. H. Ribble, Wytheville: Something like fifteen days ago I had a case of diphtheria. A sister slept in the bed with the patient, the night before. I gave the sister prophylactic dose of antitoxin, and the patient 10,000 units. Ten days after this I sent swabs from both to Health Department for examination—the sister's was positive—the child who had diphtheria, negative.

Dr. Wm. S. Keister, Charlottesville: I am glad that I have stirred up some questions. However, some are right hard to answer. As I understand it, one of the chief drawbacks is that it takes from six to twelve weeks to develop immunity with toxin-antitoxin. We inoculated most of the children in Albemarle County at the time of a diphtheria outbreak. We have to ride a horse when he is ready. We urged the people to be protected before the school term opened. I wrote to the different teachers to please let me know if any would like to be inoculated before the Fall session. I received one letter in reply. It is very difficult to get the fullest co-operation from the school authorities and parents. The opportune time is when no diphtheria is present, but we feel, from a Public Health standpoint, that the time to do the work is when we can get the people to take advantage of it.

Out of twenty-seven hundred inoculations, one child developed diphtheria about ten days after the third inoculation. We do not guarantee that immunity will develop in that time. I believe that where children have been closely associated with cases of diphtheria, antitoxin is worth more. I do not think it advisable to inoculate a whole school because of the danger of anaphylaxis. It seems that when there is no diphtheria, people are not interested. I personally feed that it often takes some little time to develop immunity, but I believe that quite a few get

protection in less than the average six weeks. I have not had enough experience to tell whether toxin-antitoxin makes the case any milder, but I should think it would be milder. It does no harm to give toxin-antitoxin to those directly exposed to diphtheria.

In regard to the question of whether to give toxin-antitoxin or straight antitoxin, it is hard to say. We did a rather peculiar thing in Nelson County. Some of our Albemarle children were in school across the line in Nelson, and we considered that an excuse to go over.

Dr. Sizer, of Schuyler, had had experience with some sixty odd cases of diphtheria. These had run on for several weeks and the people were very anxious to open school. It was a question what should be done. We decided to "strain a point." We gave every child a prophylactic dose of one thousand (1,000) units of antitoxin. On account of the danger of anaphylaxis many of the physicians in Albemarle have hesitated to give it in this way. It is sometimes permissible, however, where physicians see the case every day and observe closely the other members of the family to wait to give them antitoxin until symptoms occur. In regard to anaphylaxis, some feel that desensitization is one way to get around it—giving about one-half c.c., waiting about fifteen minutes, giving another one-half c.c. and waiting fifteen minutes, then another, and waiting fifteen minutes, etc.

I am very glad Dr. Page said a word about Miller School. When a case of smallpox broke out we vaccinated every living soul, the laborers, pupils and others. Although there were marked symptoms of smallpox, not another case occurred and there has been none since. Every pupil was also inoculated with diphtheria toxin-antitoxin.

Throat cultures are examined by the Laboratory of the State Board of Health. A negative culture does not mean anything in diphtheria. If the physician has any idea there is a case of diphtheria, he should not wait for laboratory diagnosis. He should give antitoxin, then if the laboratory diagnosis confirms his opinion, he can pat himself on the back. I think the thing to do is to give antitoxin in five, ten, or twenty thousand units. Do not wait until the Board of Health confirms your clinical diagnosis.

THE ROENTGEN RAY TREATMENT OF CERTAIN NON-MALIGNANT CONDITIONS OF THE UTERUS.*

By A. L. GRAY, M. D., Richmond, Va.

Radiotherapy, including both roentgen and radium therapy, for deep-seated malignancy, whether of the uterus or other of the less superficial viscera, has been followed by some measure of success. While the newer methods of measurement of dosage and means of obtaining the desired depth dose are giving increasingly encouraging results, these results are still far from uniform and can not be predicted with even a fair degree of certainty. There are, however, other conditions of the uterus which, though they may not present so hopeless an outlook for their victims, nevertheless may cause as complete disability, as intense pain and, unless subjected to the dangers and suffering of a major surgical operation, as definite a fatality as is usual in uterine carcinoma. In these conditions it can be safely stated that radiotherapy has proceeded beyond the experimental stage and may be classed as practically a specific.

The conditions referred to in the foregoing statement comprise uterine fibroids, uterine hyperplasia, as fibrosis of the myometrium, hypertrophy with or without hemorrhage, certain menstrual disorders accompanied by alarming systemic or nervous manifestations and idiopathic menorrhagia or metrorrhagia.

Shortly after the advent of the Coolidge tube I was called upon by Dr. Stuart McGuire to treat a lady with a uterine fibroid approximately the size of an adult head. This lady had been referred to him for hysterectomy, but the hemorrhage had been so profuse and of so long duration that her hemoglobin was too low and the blood volume so reduced that he declined to operate and resorted to various means to ameliorate her condition, but without material benefit. The tumor was irradiated through twelve portals by the intensive cross-fire method. Following the second series, an interval of four weeks having elapsed between the first and second, all bleeding ceased and the patient rapidly regained her blood supply. A third series was given, after which the operation was done successfully and an uneventful recovery ensued. The size of the tumor was also materially reduced.

Since this beginning it has been my privilege to administer deep roentgen therapy for fibroids of all sizes from the smallest palpable nodule to the size of a six months' pregnant uterus. In no case where the treatment was not interrupted by an over anxious patient or physician, has the result been other than the complete disappearance of the growth or its shrinkage to such an extent that it ceased to produce inconvenience and patient failed to return for further treatment.

As compared with surgery, I may summarize the advantages and disadvantages in the average case as follows:

*Read at fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

Surgery.	Radiotherapy.
1. Results obtained after total disability in a hospital and at home from 6 to 8 weeks.	1. Results obtained gradually in 12 to 24 weeks, with no disability that did not previously exist.
2. Mortality risks and suffering incident to a severe major operation.	2. No mortality risk nor suffering, except a transient nausea and slight malaise in 50% of cases.
3. Results after complete recovery definitely permanent.	3. Recurrences may arise in a small percentage of cases requiring further irradiation.
4. The usual nervous manifestations of the menopause may often be delayed by leaving a portion of a healthy ovary. This may, however, be followed by cyst formation and a subsequent operation may be necessary.	4. In large fibroids it is difficult or impossible to cause a disappearance of the tumor without destroying the ovarian internal secretion.
5. Opportunity afforded to examine tumor for malignancy.	5. No such opportunity except in sub-mucous fibroids.
	6. The economic advantages are markedly on the side of radiotherapy.

In the second class of cases in which there is no definite tumor present, but where a hyperplastic condition exists, often attended by severe menorrhagia or a persistent metrorrhagia, unless there be some other accompanying lesions, as ulceration, polyps or malignancy, a definite cure may be expected in two to four series of treatments. A case illustrative of this class is as follows:

Mrs. S., w. f., age 49, multipara, referred by Dr. W. L. Peple, had been having severe menorrhagia for the last several periods. Hemorrhage profuse and continuing with only a few days' cessation between the periods. Weak, anemic and nervous.

Pelvic examination by Dr. Peple revealed a uterus three times its normal size, hard and fibrotic. Roentgen radiation was administered through four ports of entry, cross-firing on the uterus. Bleeding ceased and did not return after first treatment, but, with a view to producing a complete menopause, two additional series were given at four weeks' intervals. Following her third treatment she was returned to Dr. Peple for another examination. He reported that the uterus was then about normal in size, possibly slightly smaller than the average, was freely movable and showed no abnormality. There has been no recurrence since her discharge one year ago.

Illustrative of the third class: Mrs. Y., w. f., age 42, nullipara, was referred by Dr. Stuart Michaux, on account of menorrhagia, dysmenorrhea and a reflex or nervous vomiting that seriously threatened her life from emaciation and exhaustion. Her menstruation continued at regular intervals with slight improvement, until three series of treatments had been given, after which it ceased. A fourth series was administered in order to insure a permanent menopause.

Patient has continued to improve, but has always been of a neurotic type. There has been no return of the former trouble since the last treatment, five months ago.

In women, during the child bearing period it is possible in many instances to re-establish a normal menstruation rather than produce a complete cessation. That this may be accomplished even in the presence of a fibroid is shown in the following case:

Miss W., age 22, had abandoned her employment as a secretary, on account of severe menorrhagia, which had caused confinement to her room and bed for a considerable portion of the preceding six months.

She was referred by Dr. Stuart Michaux with a diagnosis of a small uterine fibroid. Four series of roentgen ray treatments were given before menstruation ceased, but none was given thereafter. Menstruation was stopped for two months only, after which it returned and has since been entirely normal. Examination by Dr. Michaux showed a complete disappearance of the fibroid.

As to the after effects on patients in whom a premature menopause has been produced, the results as compared with surgery are about the same. In my own experience I have observed that there are as a rule fewer and less intense reactions the nearer the patient's age approaches the normal climacteric and in younger women I have thought that the manifestations were of a lesser degree when stoppage was more gradual. Authorities agree that the treatment in no way affects sexual desire or gratification.

In conclusion, it seems that there are distinct fields for both surgery and radiotherapy in the treatment of these non-malignant conditions. Surely it would be unwise to await

the slow action of radiotherapy in any case in which the delay would be detrimental to the patient; as for example in alarming hemorrhage, possible early malignancy where a cure might be effected by a surgical removal, or where a total disability already exists in a patient who is a good surgical risk. Perhaps it is better to remove by myomectomy small subperitoneal fibroids in women during the earlier child bearing period, but in other cases falling in the three groups before mentioned there seems to be abundant evidence to prove that radiotherapy is the preferable procedure.

Since the effects of radium and the roentgen rays are so nearly identical the choice will depend upon the physical factors. Radium introduced into the uterus produces its effects more promptly, but control of the dosage is probably more difficult with radium than with the roentgen rays, and there is also added the risk of the surgical procedure required for its introduction.

The importance of a correct diagnosis can not be too strongly stressed. Where failure has resulted it will perhaps usually be found that some unrecognized complication has existed.

300 *Medical Arts Building.*

MESENTERIC TUMORS.*

By JULIAN L. RAWLS, M. D., F. A. C. S., Norfolk, Va.

I am lead to report these two cases of mesenteric tumors because of the apparent rarity of this class of tumors. The latest reports that I can find record about two hundred cystic tumors of the mesentery and only one hundred solid tumors. I am inclined to think that there are a good many isolated instances of mesenteric tumors that are not on record, either because the operator did not think them of sufficient importance to justify reporting them or else because of unfortunate results.

However, Dr. Edmund L. Bartlett, of the University of California Hospital, reporting cases of mesenteric cysts, states that for over a period of five years in one thousand five hundred and seventy-two (1572) laparotomies only two cases of mesenteric cysts have been seen at the University Hospital. He also states that "In none of the instances reported was the clinical diagnosis correct and for the most part the true condition was not even suspected."

Carter, writing in *Surgery, Gynecology and Obstetrics* in November 1921, reports a case of mesenteric cyst in a young Indian girl operated on for appendiceal abscess. He also states that no reported case has been diagnosed previous to operation.

Keen's Surgery states that mesenteric cysts belong to the rarities of surgical observation, though they seem to be four times as common as solid tumors of the mesentery.

The cysts may be serous, chylous, hemorrhagic, dermoid and echinococcic. The solid tumors may be lipoma, sarcoma, carcinoma and fibroma, fibroma being the least common.

Ewing states that chyle-angioma of the mesentery is a cavernous lymph-angioma containing milky fluid which arises from congenital or acquired obstruction of the lacteal vessels.

As we have seen, the accurate diagnosis is almost impossible before operation. If seen early, before they have reached a large size and before inflammatory changes have fixed them, we should have a movable tumor without very severe pain. Wilensky states that the free mobility of the tumor is the most important single symptom and that, if in addition it can be demonstrated that the intestine maintains a fixed position to the tumor and is movable with it through several examinations, a presumptive diagnosis of mesenteric tumor is justified. A barium series with pictures taken with the patient in different positions might throw some light on the subject. At times they may cause obstruction by pressure or a twist in the mesentery. This, of course, is a surgical emergency and the obstructive symptoms overshadow the original symptoms.

Two methods of treatment are suggested for the solid tumors, enucleation or resection of the bowel with removal of the tumor. One of four methods may be tried with the cystic tumors, enucleation, resection of the bowel with removal of the tumor, incision and drainage and marsupialization. Aspiration certainly has no place in the surgery of today.

Vance states that the operative mortality is high. The twenty-seven cases which he collected had an operative mortality of 41%. Wilensky states that resection adds to the operative risk and should be avoided if possible. He goes on to say, however, that in

*Read by title at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

those cases where the overlying intestine is centrally placed and a tumor bulging both leaves of the mesentery equally, or if the growth is adherent to the gut at its wall or involved in the process, resection should be resorted to at once.

With this rather brief survey I wish to add two more cases.

Case I. John Horn, thirteen years old, school child.

C. C. Painful mass in lower right side of abdomen.

F. H. Father died with rheumatism. Mother died suddenly during pregnancy. One brother and two sisters living and in good health. No T. B.

P. H. Measles and pertussis. Influenza 1920. In 1918 he had an attack diagnosed as appendicitis. He was in a hospital for two months. He developed a mass in his right lower quadrant which was treated by electricity.

P. C. Ever since this attack four years ago, he has had some pains in his abdomen. He has not vomited but food gives him cramps. His pain is worse at night. He is obstinately constipated. He is very active when not having pain in his abdomen. He was taken to the King's Daughter's Clinic where he was seen by Dr. Lawrence Royster and referred to me for operation.

Physical Examination: Well nourished and well developed white boy, apparently not very sick. Head negative. Pupils react normally to light and accommodation. Tongue clean and moist. Teeth in good condition. Neck negative. No palpable glands. Chest negative. Heart and lungs normal. The abdomen is negative except for rigidity and tenderness on right side, most marked in lower right quadrant. There is a suggestion of a mass around his appendix which is tender on pressure. External organs of generation normal except for phimosis. Both testicles are in the scrotum. Limbs are negative. Wassermann negative. Urinalysis negative. White blood count 6500.

Diagnosis: Probably tuberculosis of the caecum.

At operation a firm hard mass was found occupying the mesentery of the lower ileum. It was firmly attached to the bowel and movable with it. The intestine was clamped on either side and the intestine and tumor were removed with a cautery knife. Before an anastomosis was made, it was seen that one end of the gut did not have sufficient blood supply to take care of it and a further resection was necessary. Then an end-to-end anastomosis was done, a chronically inflamed appendix was removed, and the abdomen was closed in layers without drainage. The following day his condition was not satisfactory, he was vomiting bile, and his pulse was rather rapid. He was given a gastric lavage and a large amount of dark brown fluid returned. After that his convalescence was uneventful except for a superficial infection of his wound which added to his stay in the hospital. He was discharged on his twenty-fourth post-operative day, with the wound practically healed.

The following is a report of Dr. Roche of the tissue sent to the laboratory: "The tissue consists of mesentery with loops of small intestine forty-four cm. in length and another piece of intestine fourteen cm. in length. Occupying the mesentery is an indefinitely outlined mass involving the wall of the mesentery at one point. The mass has a grayish, roughened external surface with raised yellowish nodules scattered here and there over the external surface. On section through the center of the mass, the cut surface has a dark red spongy consistency, showing many dilated and cystic vessels from which milky fluid mixed with blood exudes. Appendix sixteen cm. long, external surface smooth, meso-appendix very fat, lumen filled near distal end with fecal masses. On section, mucosa for about two cm. from proximal end appears normal. From this point to the distal end there is a marked hypertrophy of the mucosa which is covered by a hemorrhagic exudate.

"Frozen sections of the mesenteric tumor show dilated lacteals and lymph spaces. The lymphatics surrounding the tumor show a simple hyperplasia. Diagnosis: Chyle or lymph angioma."

Case II. B. S. Colored woman. Age 21 years. Married.

C. C. Pain in lower abdomen on both sides.

F. H. Negative.

P. H. Negative, except that in 1919 she had an abdominal operation by a colored physician for "ovary trouble," and has not menstruated since. She has been married five

years and has had one full term pregnancy, no miscarriages.

P. I. Began three months ago, gradual onset with pain in both sides of lower abdomen. There has been intermittent nausea and vomiting ever since the onset. She states that she has lost thirty-five pounds in weight in the last three months. She has been constipated ever since she has been sick. A physician was called to see her who told her that she had a "pus tube" and needed an operation.

Physical Examination: A well developed but rather poorly nourished colored female. Weight one hundred pounds. Head and neck negative throughout. Chest negative, heart and lungs normal. Abdomen—operative scar in mid-line. There is some abdominal distention, with tenderness and rigidity over the lower abdomen. A mass the size of a cocoanut is felt above the symphysis. On vaginal examination the cervix is normal and the stump of the uterus can be made out supravaginally. Tubes and ovaries are not palpable. There is nothing in the cul-de-sac. The limbs are negative, reflexes, normal.

The most probable diagnosis, recurrent ovarian malignancy.

She was operated upon May 17, 1922. The omentum was found adherent to the stump of the cervix and broad ligament. The uterus, both ovaries and tubes had been removed at the previous operation. On freeing this adherent omentum, the tumor was found to lie between the layers of the mesentery of the lower segment of the ileum, with several centimeters of the ileum densely adherent to it. The gut was clamped on each side, burned through, and the tumor removed. It was found that in removing the growth it had been necessary to sacrifice about fifteen centimeters of the mesentery on each side. This free intestine without sufficient blood supply was amputated with a cautery and an end-to-end anastomosis completed the operation. The abdomen was closed without drainage. Very little blood was lost during the operation but the patient had a fair amount of shock and was given fluid subcutaneously several times during the next forty-eight hours; after that her convalescence was uneventful. She was discharged from the hospital on June 5th, twenty days after her operation. Shortly before leaving the hospital she complained of pain over McBurney's point and developed some tenderness and rigidity of the right rectus. She had a slight acceleration of the pulse rate and a leucocyte of 14,000 but no rise of temperature.

Following is the pathological report of Dr. Roche: "The tissue sent to the laboratory consists of a large irregular mass in the mesentery, 18 by 18 by 16 cm. External surface rough and irregular. Center of mass is oval shaped, hard, and resembles a uterine fibroid. Extending entirely over the mass, passing over the top and down either side, crossing in front at the lower edge of the tumor is a loop of small intestine. The lumen of the intestine is free except on top of the mass where the attached surface has ulcerated through and formed a fistula ending in a cavity in the tumor mass. The cavity is filled with a foul smelling substance made up of undigested food, blood clots, etc. Whole partly decomposed strawberries can be made out. The cavity is about 12 cm. in depth and communicates on either side with the lumen of the small intestine. On section the wall of the hard central mass is composed of loose white fibrous tissue showing few blood vessels. Lining the cavity is a smooth glistening surface resembling mucous membrane but is more firm. Parts of the cavity show a rough granulated surface with a purulent exudate and much hemorrhage surrounding it. Microscopically the lining of the cavity showed no evidence of mucous membrane. Two small pieces of small intestine showed marked congestion, otherwise normal. Altogether 90 cm. (about three feet) of small intestine were resected. Frozen sections made from the lining of the central mass and parts of the wall showed fibromatous tissue similar to fibromata found in the uterus.

"Diagnosis: Fibroma of the mesentery, adhesions of small intestine to the mass, necrosis and ulceration of intestines.

"The question of a diverticulitis with resulting inflammatory change has to be considered. This seems hardly probable since the mass lay entirely within the leaves of the mesentery and the cavity was not mucous lined and the sections showed fibroid tissue with few blood vessels."

The first tumor has been classified as a cystic tumor but it was not a true cyst as solid tissue predominated and the mass resembled very much a sponge.

142 *Main Street.*

OVARIAN CYST WITH REPORT OF AN UNUSUAL CASE.*

By J. COLEMAN MOTLEY, M. D., F. A. C. S.,
Abingdon, Virginia.
Surgeon to Johnston Memorial Hospital.

A certain element of surgical romance will always be associated with ovarian cysts because of the pioneer work of Ephraim McDowell. Our whole experience in the realm of abdominal surgery had its beginning in the first ovariotomy by this fearless doctor. During recent years mammoth tumors of the ovary have been quite rare because of the very simple reason that they fall into the hands of a surgeon and are removed before they attain great size.

Histologically, the very large cysts are usually cystadenomas that arise from the remains of Pfluger's tubes or the Wolffian body. Cystic tumors that arise from the Graafian follicle usually do not grow to large size.

In 1922, J. W. Ward reported a cyst weighing 221 pounds. Unfortunately his patient died one hour after the removal of the tumor. Ward reported from a review of the literature five cases weighing more than 225 pounds, viz: Binkley 225 pounds; Tuffier 235 pounds; Bullitt 245 pounds; Barlower 298 pounds; and the very remarkable case of Spohn in which he estimated the weight of the tumor at 328 pounds. Four other cases of more than 200 pounds are recorded, twenty-nine weighed more than 150 pounds and seventy-eight more than one hundred pounds.

Dr. J. S. Horsley, in 1911, reported the successful removal of a cyst weighing 116½ pounds. In 1900, J. B. Bullitt (quoted by Horsley) collected from the literature up to that time twenty-two operated cases of ovarian cysts weighing more than one hundred pounds. Bullitt reports the case operated on by A. M. Cartlege and himself, weighing 245 pounds, to which reference has already been made. This case died from intestinal obstruction one week after operation. Of the twenty-two cases reported seven died, a mortality of 32%, so it can be readily seen that these patients are relatively poor surgical risks.

In the case I wish to report the tumor is rather small compared with some which have been recorded, but the condition was unusual in my experience and I hope the brief history of the patient will not be without interest:

Mrs. D. H. D., case No. 7713, age 51, admitted to Johnston Memorial Hospital May 11th, 1923, complaining of an abdominal tumor of 25 years' duration. One paternal aunt had a similar tumor. The family history was otherwise negative. The patient has always enjoyed good health. She has suffered with considerable constipation in recent years on account of the pressure of the tumor. Had a severe illness 32 years ago, which was probably typhoid. A mild attack of influenza during the first epidemic. She had a prolonged cough during the past winter and has had nasal catarrh for many years. Appetite and digestion always good. No urinary symptoms. Married 31 years; five children, 3 living and well; two still-births. Passed her menopause three years ago.

Present Illness—About 25 years ago the patient first noticed that her abdomen was beginning to enlarge. Seventeen years ago she was examined by a physician who told her that she had a "sac of water" in her abdomen. The tumor has been gradually increasing in size until the past winter when she became practically helpless because of the weight and pressure. Six or seven years ago there was a sudden decrease in the size of the tumor until she was almost normal in the waist-line, but the tumor soon began to enlarge again. She

suffered considerably with shortness of breath when the tumor suddenly disappeared. She feels well now except for the burdensome weight of the tumor and the obstinate constipation. She states that at times she "belches up gall."

Examination—Patient is a woman of small

*Read at the meeting of the Southwestern Virginia Medical Society in Abingdon, September 6 and 7, 1923.

frame, good color and healthy appearance. Eyes, head and mastoids negative. There is an atrophic rhinitis. There are no teeth except a few snags and roots. Temperature and pulse normal; blood vessel walls soft. Blood pressure, systolic 165; diastolic 95 mm. The heart is pushed upward by the abdominal tumor so that the apex beat is in the fourth interspace 9 c.m. to the left of the midsternal line; the heart is regular, has a good muscle tone and there are no murmurs. The chest is negative, except for the bulging out of the rib margins by the abdominal tumor. There is a moderate anterior curvature of the lumbar spine, probably due to the weight of the tumor. Abdomen: occupying the whole abdomen is a huge, symmetrical tumor. The distance from the superior to the inferior pole is 43 inches; from side to side 46 inches. The tumor is smooth and tense but cystic in character, and there is a distinct fluid impulse on one side when tapped on the opposite side. Pelvis: the uterus can be felt pressed down behind the abdominal tumor. Blood count: W. B. C. 8,200; polys. 87%. Urine: albumen slightest visible trace, with two to four r.b.c. to the high power field, a few bacteria, otherwise negative. Impression: mammoth ovarian cyst.

On May 12th operation was done. A low right para-median incision was made. The cyst was found to be adherent to the entire anterior parietal peritoneum. A small nick was made in the cyst wall, a large rubber tube was thrust into the cyst cavity and the fluid contents syphoned off into a barrel. The opening in the wall was then closed, the cyst dissected free from its dense adhesions to the abdominal wall, its pedicle ligated, and the sac removed. The abdomen was closed with a gallon of hot salt solution left in the cavity. A considerable quantity of the cystic fluid was spilled while the tube was being placed in the sac for syphonage. What was collected, with the cyst wall, weight 107½ pounds.

The day before operation the patient weighed 240 pounds. Two weeks following the operation her weight on the same scales was 105½ pounds.

Her post-operative course was fairly uneventful except that for about a week she had a relative paresis of the intestines and her bladder was retentive. The bowel paresis was followed by a few days' incontinence, and following this there were several days more of alternating constipation and diarrhoea.

In a personal letter, dated August 21st, the patient writes: "I can say I am thankful to tell you all that I am getting along just fine. Feeling better than I have for several years. I will soon be strong enough to do all my house work. I now weigh 125½ pounds."

BIBLIOGRAPHY.

DR. J. S. HORSLEY: "Large Ovarian Cysts with Report of a Case." Surgery, Gynecology and Obstetrics, Feb., 1911.

DR. J. W. WARD: "A Mammoth Ovarian Tumor." Surgery, Gynecology and Obstetrics, Jan., 1922.

HOW DOES RADIUM PRODUCE ITS RESULTS?*

By A. P. JONES, M. D., Roanoke, Va.

The underlying principle that abnormal tissues are more readily affected by the rays of radium than are normal tissues is now universally recognized, and forms the starting point for all radium therapy.

This simple statement, however, is entirely too vague, too much of a "glittering generality," to satisfy the inquiring mind, or to furnish a measure of the effects of a given dosage. Many investigators have, therefore, made studies of the histological picture presented by tissues which have been exposed to the rays of radium.

A recent case of my own demonstrated very nicely the sequence of events after treatment with radium, and suggested the title of this paper.

The patient, Mrs. J. W. P., aged 55, was

*Read at the meeting of the Southwestern Virginia Medical Society in Abingdon, September 6 and 7, 1923.

first seen on February 22nd, of this year. At that time she had on the outer surface of the right thigh an elevated nodule about the circumference of a dime, not pigmented, but with a history of recent rapid growth. A gross diagnosis of epithelioma was made and radium applied. At the end of a month, though decreased in size, the growth was still evident and treatment was repeated. Two further treatments were given and finally, on August 1st, not satisfied with the progress made, I excised the growth with the cautery.

Study of frozen and paraffine sections showed the following interesting features:

At first glance the feeling was that a mistake in diagnosis had been made, as the whole field seemed to be filled with fibrous tissue. Closer study showed, however, occasional, widely separated clumps of definite epithelial cells, completely cut off by the encircling strands of connective tissue. These epithelial cells were of the type seen in an ordinary squamous celled epithelioma, four to twelve in a group, and very evidently degenerating. The cell outline was irregular, the cytoplasm small in amount, and the nuclei irregular in staining and vacuolated. In a word, what we have is an epithelioma undergoing fibrosis and this shows a late stage of the process.

In looking up the literature, especially as quoted in Simpson's "Radium Therapy" (C. V. Mosby, 1922), one finds that the sequence of events following the application of radium may be divided into two distinct stages. The first we may call the Stage of Destruction, and the second the Stage of Repair.

In the Stage of Destruction, the curious and interesting feature is that the effect is delayed for a period of two or three to ten days, in marked contrast to the immediate result of cauterization. Microscopic study shows that the elements of this tissue most affected are the nuclei of the epithelial cells which rapidly begin to go to pieces, and a little later on the injury to the capillaries and the invasion of the polymorphonuclear and mononuclear leucocytes is observed.

Soon the fibroblasts make their appearance and with them is instituted the Stage of Repair, which goes on, as we have seen, to a replacement of the original growth by fibrous tissue.

The similarity of the process to the familiar phenomena of inflammation and repair by granulation tissue has been recognized by all of you.

It becomes evident, then, that the penetration of the radium rays, and the correspondingly wider zone of affected tissue, constitute the only real difference between the reaction to radium and the familiar picture of inflammation and repair.

Jefferson Hospital.

SUBACUTE BACTERIAL ENDOCARDITIS IN CHILDREN.*

By W. C. CAUDILL, M. D., Pearisburg, Va.

That subacute bacterial endocarditis is more common than was formerly thought is evidenced by the many recent reports of various observers. The fact that it is commonly met with and difficult of recognition is my object in presenting this paper.

I prefer to speak of this condition in children, not because the etiology, pathology or clinical course of the disease is so different from the same condition found in adults, for it is very much the same, but because I feel that due emphasis has not been given this grave malady in childhood. However, it is not as frequent in children as adults, which is probably due to the fact that it arises for the most part in individuals who have had previous inflammation of the heart valves with permanently damaged leaflets, or is engrafted upon a congenital heart lesion. Clark, in a recent article in the *Journal of the A. M. A.*, has dwelt entirely upon this latter phase of the disease and states that in children, in whom both congenital and acquired cardiac affections are frequent, it is surprising, as Cautley has pointed out, that bacterial endocarditis is not more common than it is. In my opinion, the congenital heart lesion is one of the most important predisposing factors of subacute bacterial endocarditis in children.

The exciting organism is usually the streptococcus viridans which Aschoff suspects is a modified pneumococcus. The Bacillus diphtheriae, however, as well as the staphylococcus, meningococcus, the pneumococcus, the Bacillus coli, the Bacillus anthracis, the gonococcus, and other organisms, have been found in some cases in the absence of the streptococcus.

Subacute bacterial endocarditis should be considered to be of secondary origin in all cases. The avenues of entrance of the infecting agent

*Read at the meeting of the Southwestern Virginia Medical Society at Abingdon, September 6 and 7, 1923.

are numerous. The blood is furnished with the specific organism from any source to which infection may be carried and from which the blood current is infected. The essential point to remember is that the condition is the result of a bacteremia and the source of infection be determined if possible. An effort should be made to determine the specific organism by repeated blood cultures, but it is unfortunate from the bacteremic point of view that blood cultures are so often sterile in malignant endocarditis. Smith says, "Certainly they seem to be more uniformly negative in the early period of the disease, at the very time when they could be of the most value in diagnosis and in treatment, than they are later in the condition when the patient is desperately ill."

I have already mentioned that this condition is difficult to recognize, and this is especially true in the early stages of the disease because in many cases the purely cardiac symptoms are in the background and the first thing that calls our attention to the heart is embolic manifestations.

Billings in 1909 reported a series of fourteen cases and stated that in one patient the symptoms began two years before the real condition was recognized. One case began fourteen months before a definite diagnosis was made. Another patient probably suffered from the disease for more than two years, and in the early part of the illness, the diagnosis of typhoid was made for a condition which was, in all probability, infectious endocarditis, the diagnosis having been based on the fact that there was fever and splenic enlargement.

Yet of the various forms of endocarditis in children, the subacute bacterial type presents the most definite clinical picture. The disease may be insidious or precipitate in its onset. It is usually insidious and for weeks or months the child may not appear to be very ill. The chief complaint may be slight headaches, gastro-intestinal symptoms, painful joints or pains in the left upper quadrant of the abdomen. The fever is continued over a long period of time and is usually of comparatively low grade, though it may reach 104° to 105° and is irregular and remittent in type. Leucocytosis is practically always constant and is an important aid in diagnosis. There is progressive weakness and emaciation with marked pallor and anemia. The spleen is usually enlarged, palpable and tender. Painful cutaneous nodules may be found upon the hands and feet. Clubbing of the fingers may or may not be present. Erythematous and petechial rashes are common and chills and sweating are usually present during some stages of the disease. Embolism may cause the most diverse manifestations, among which are embolic pneumonia, delirium, coma, hemiplegia, monoplegia, and central derangements of vision and hearing in consequence of implication of arterial branches in the brain or meninges. There may be pain in the lumbar region and bloody urine from infarction of one or both kidneys, resulting in a glomerulo-nephritis.

Now add to this clinical picture the knowledge of the pre-existence of a heart lesion, either congenital or acquired, and if these symptoms are kept constantly in mind, it seems to me that a diagnosis of subacute bacterial endocarditis should be made certainly within the first few weeks of the disease, even though the blood cultures and cardiac findings are negative. I wish to report the following case:

History: H. S., a girl, aged seven. Congenital heart lesion was discovered a few days after birth. Father suffers from angina pectoris. Mother has had more or less rheumatism all of her life. Five sisters, all living and in good health; no brothers.

Patient had a severe attack of diarrhea at nine months of age. Had measles and another attack of diarrhea at age of three. Had an attack of pharyngeal diphtheria in November, 1921; 15,000 units of antitoxin was given and patient made an uneventful recovery. The heart showed no signs of distress at any time during or following the attack, and the blowing systolic murmur, which had been present since birth, remained practically unchanged. The tonsils remained hypertrophied and injected until tonsillectomy was done in November, 1922. Another attack of diarrhea occurred in February, 1923, and from this time on the patient did not feel very well.

The active symptoms of the present attack began in March, 1923. The patient had a slight epistaxis, also diarrhea, and complained of headache and soreness over abdomen, which was intensified over the splenic area. The temperature ranged from 100° to 102,° and was always higher in the afternoon. A provisional diagnosis of typhoid was made in spite of the fact that the blood count at this time was 12,000, but was later ruled out by a still higher leucocyte count and two negative

Widals. The temperature continued an irregular, remittent course, being almost normal for a few days only to recur again. The patient was bright and did not seem very ill. Leucocytosis remained constant and reached as high as 36,000. Gas and slight soreness of the abdomen was still present and an increasing degree of pallor could be noted. Kidney intoxication in some form was next considered most probable. The urine showed slight albumen, a few red cells, and a few hyaline and granular casts. There was no clubbing of the fingers, no petechiae, and no painful nodules in the hands or feet. Endocarditis was suspected but a positive diagnosis was not made until the latter part of June, when a typical attack of embolic pneumonia occurred. The pneumonic process cleared up after about ten days and the lung remained clear until August, when there was a second attack similar to the first. Since June an increase in the transverse diameter of the heart has been noted as well as frequent changes in the character and intensity of the murmur. The course has been steadily downward with increasing weakness, pallor, and anemia. For the past few weeks hematuria has been more or less constant. The temperature curve remains the same. There is still no clubbing of the fingers and no petechiae. At present the patient is in a state of extreme emaciation, complete anorexia, rapid pulse, mild delirium, and the end is not far off.

No blood cultures were obtained in this case on account of the profound nervous irritability of the patient; but I do not doubt for one moment that she is dying from subacute bacterial endocarditis.

NOTE:—The patient died September 8, 1923.

INFLUENCES AT WORK ABOUT THE INFANT.*

By DANIEL M. MOORE, M. D., Stonega, Va.

Man is the superior being of the animal kingdom. He heads the list as the most intelligent, has the highest state of mental development and towers over all others and uses them to serve his purposes in his various pursuits. But this is man in his adult life. Where does he stand at birth? The frog distributes her eggs in some quiet waters and goes about her business, the ostrich lays her eggs in the sand to be hatched out by the sun, the young calf can walk at birth and has intelligence to know the source of its food supply, while the house cat comes into this world with its eyes closed and is cared for by its faithful mother until it can better care for itself. But of all helpless and dependent creatures the human infant heads the list. Ascend the scale of animal life and notice how nature, as she increases the intellect, also increases the responsibility of the parent to care for the offspring! This responsibility rests heavily on the human race. Nature has endowed the lower animals with an instinct for self preservation in many respects that man has to learn by experience and transmit to his offspring by precept and example. The young squirrel or monkey knows what foods are suitable and what are poisonous. Consequently, they do not have to contend with a string of diseases that come as a direct result of indiscretions of early life. If mortality statistics were available among lower animals for the first year of life, they no doubt would show a sad reflection on the intellect of man, however high his state of enlightenment may have attained. We, no doubht, have gone far astray from nature's way in caring for the young and it is up to us to get back to nature's way if we are to measure up to the responsibilities that she has placed upon us. What influences are we as physicians bringing to bear toward the betterment of the offspring of the present day generation? Are we not responsible to a degree for this wandering away from nature's way? Let us consider for a while some of the influences that are at work about this little tender piece of humanity, the infant; and surely there is nothing in this world more susceptible to influences.

Some one has said that "The life history of the individual depends upon three great factors, viz; heredity, environment, and the will." Since we are dealing with the infant primarily, of course the last named, the will, has not come into play yet as far as the infant itself is concerned, but we may bring influences to bear on that life that will enable the will of that infant later on in life to help the next generation in a variety of ways.

Every human being has a multitude of ancestors representing as many lines of life which in the end go to make up a heritage that

*Read before the Wise County (Va.) Medical Society.

is indeed complex. The influences along these lines are as numerous as the sands on the sea shore and too appalling for finite mind of man to comprehend, but we shall consider them only as to how they may be applied to the present generation and thereby improve the heritage of this and succeeding generations. Every human organism has a threefold existence, namely; the ante-conception, the antenatal, and the post-natal. In the ante-conception period there are of course two separate and distinct germ cells upon which these hereditary influences play their important role. Have we stopped to think of the influences we are wielding on preconceived life in our every day battle with diseases? Isn't our mission, while primarily aimed at the relief of human suffering, most vitally concerned with improving the heritage of those yet unborn? Are we not missing the opportunity of our lives for leaving the world better by having lived in it when we lightly pass the buck on the present day venereal question? A heavy toll has been exacted by this grim monster not only in the death rate but in stunting and dwarfing the bodies and minds of those that are cursed by its influence. The tubercular question also gets in its work not so much by direct inheritance but through its tendencies. Alcoholism has done its share toward breaking down the heritage of multitudes. These great national movements along these lines have as their ultimate object and aim the improvement of the present generation and the heritage of succeeding generations. Venereal prophylaxis has a great future ahead of it and it will succeed in so far as the medical man is willing to lend his aid in educating the youth of the land to the terrible effects that follow in the wake of his experimental youth. They put a light regard on these matters and who but the medical man has the opportunity to impress the seriousness of these affections not only upon the youth himself but his posterity after him? Eugenics will come to its own in the no great distant future and will no doubt exert a very beneficial influence along these lines. Therefore the great bulk of hereditary influences must be applied to the present generation in order to be beneficial to the next. The influences that may be brought to bear on antenatal life are not so numerous, but none the less important. The obstetrician here comes in for a large responsibility as respecting the child, for his care should begin with conception and extend up to and include the delivery of the child. It is up to him to keep that mother in as sound mental and physical health as possible in order for the child to be healthy. Maternal impressions, however much these may be ridiculed, we are bound to admit exert a tremendous influence on the child *in utero*, and the mother's mental state should be under constant supervision.

Granted now that we have a normal healthy newborn babe and a normal healthy mother. Heredity has, as far as this child is concerned individually, done its work, and from now on it is to be a struggle with environments. We are all more or less familiar with these environments and what a struggle the little fellow has if he is to survive. We shall not recount these struggles and their effects but suggest some influences that may be brought to bear on this little life that will tend to increase the child's chances in this struggle. The average present day mother has very little knowledge of the duties and responsibilities of motherhood and it is precious little that the schools and colleges are doing toward instructing the future mothers. She realizes her handicap and is as apt and eager a pupil as you will find in any school. Are we going to leave her to pick up a smattering knowledge from some old experienced though misguided mother that has raised a dozen scrawny children? Take a little time and give this mother some fundamental principles on which she can build. Tell her the importance of a well regulated life and diet for herself, make her promise you that she will nurse her child every three hours and no more, tell her how to bathe the baby and what clothes are suitable for the time of the year, the importance of fresh air, etc., and if you have gained her confidence your time will have been well spent for she will take in more than you might give her credit for. Make yourself available to her as an information bureau and do not permit her to repeat the follies of some older mother and learn in the bitter school of experience what she might have learned from you had you only taken a short time for that purpose. Some day this mother will be the old mother in that community and she in turn will be instructing other mothers and we perhaps have started a stream of influences whose scope and end we do not know.

Great things have been accomplished in the last few years in the way of artificial feeding of infants. Many infants owe their lives to these accomplishments but, however great they may be, they are being abused, and we should take care that they are not turned into a curse. The breast fed infant has a chance on life that is worth two or possibly three of that of the artificially fed infant. Cases are few and far between in which a mother is totally unable to breast feed her infant. Jacobi, who has just recently passed to the great beyond, once said that "There is no such thing as a non-lactating mother." The supply may be inadequate and it may be necessary to supplement the supply with some artificial food but do not allow a complete substitution because of this fact alone. The most despicable failure of all failures is the mother that fails to nurse her child when there is no valid reason why she should not, unless possibly it be the doctor that permits such practices to accommodate some fashionable or lazy mother. We must take care that these benefits that have been derived from the advances along these lines are not offset by the series of disadvantages that will naturally follow if these practices are carried beyond the field for which they were primarily intended.

The chief business of the infant is to grow and develop and it is our business to see that every influence is brought to bear upon both parent and child that will produce the strongest tendencies toward bringing this about. We need to emphasize the fact that an infant is not a play thing to be disturbed and fussed over by every one that comes near it, but that it must be kept quiet and surrounded by clean fresh air. Cold dry air is not such a curse as the average mother thinks and short exposures to it each day do a great deal toward raising the child's resistance to disease. It is during these sudden changes in the temperature about a child with a low resistance that various diseases gain their entrance and bring about their deadly work. Study the mortality curve during the twelve months of the year and you will find that it reaches its peak during the hot months. There are two main reasons for this; the depressing effect of excessive heat (the same results can be brought about by too much clothing), and the favorable conditons present for the growth and proliferation of pathogenic bacteria in and about the child. Much can be accomplished toward this end if we can educate the mothers to the importance of regulating the heat and cold about the infant. They are extremists in these matters and if we can instill a little rational procedure into their minds we may save the lives of a great many babies, and at the same time pass the effect on to the next generation.

The acute infectious diseases reap a great harvest each year from the infants in the first year of life. Many infants have given up their lives as a result of some mother's indifference in exposing them to these diseases with the thought uppermost in mind of "letting them get it and get through with it." Let us impress the importance of protecting these little tender lives from these affections, at least until they are more able to withstand the onslaughts that accompany these acute diseases, and our reward will be the saving of many lives as well as the health of many individuals. We should make an attempt to teach the parents the seriousness of these affections and show them how much better chance the child will have if it is kept away from these until later on in childhood.

As you have probably already noticed, I have attempted to bring out the importance of the doctor as an educator as well as a healer in his dealings with the infant. It is up to us to take these matters seriously in hand if we are to keep up with the times along the line of prophylactic medicine which is just now beginning to come into prominence in medicine, but will be the field to receive the greatest amount of attention in the future.

THE CARE OF TUBERCULOUS PATIENTS WITH REFERENCE TO THE PREVENTION OF GIVING THE DISEASE TO OTHERS.*

By J. B. NICHOLLS, M. D., Catawba Sanatorium, Va.

The purpose of this paper is to present to you briefly some measures whereby the tuberculous patient may be rendered safe to other people with whom he may come in contact.

All of us realize that tuberculosis is spread from one person to another either through ignorance or carelessness. With the number of people who are dying from tuberculosis in Virginia from year to year, we can readily

*Read at the meeting of the Southwestern Virginia Medical Society in Abingdon, September 6 and 7, 1923.

see that we have many cases of tuberculosis with us all the time which are a menace to other people, and especially to those with whom they are daily living. Past experience has shown that a tuberculosis sanatorium is a safe place in which to live; and the object of sanatorium treatment is not only to teach the patient how to recover as far as possible, but to teach him also the necessary precautions to carry out in order to prevent giving the disease to others. I would not consider a tuberculosis sanatorium a safe place in which to live, if some measures were not practiced in order to render the patient safe, so far as protecting those around him is concerned.

The adult is less susceptible to the repeated infections of the tuberculosis germ than is the child. The measures I am going to present to you offer protection to people of *all* ages, but I wish to lay special stress upon the protection of children. The heavily infected children of today will make the tuberculous patients of tomorrow. The individual, who may be spoken of as the "careless" consumptive, may give the disease to anybody of any age; and he is a source of great danger to those who have not reached adult life.

In order to prevent tuberculosis, we must certainly consider—along with the other well known principles of proper regulation of life and habits—the *destruction* of the germs which are being thrown off from the tuberculous in the expectoration and cough.

The following directions carried out carefully, in disposing of the discharges and the things that come in contact with the discharges from the patient, will prevent others from getting heavily infected and from the probability of developing the disease.

The "open" case of tuberculosis, which is expectorating bacilli from time to time or all the time, should be separated to a certain extent from the other members of the family: he should be made to see that it is necessary that he sleep alone and in a room alone; that it is dangerous to have any one else in the room with him; that it is very necessary that children be kept out of his sleeping room day and night; and that he should have as little furnishings in the room as possible to make it comfortable, but that he should have all the light and ventilation that is available. It is better still for him to have some arrangement for sleeping out of doors on a porch, in order that he may be removed from the confinement of a room, thereby lessening the chance of the room's becoming heavily infected. He should have separate dishes to eat and drink from, and they should be boiled for ten minutes each time after using them. All articles of food which are left after meals should be burned.

Teach the patient that it is dangerous for him to expectorate promiscuously and that he should have sputum cups in which to expectorate, and that they should be burned after using them. Sputum cups may be obtained at very little cost.

The spray emitted by the cough ejects fine particles of mucus from the mouth and respiratory tracts, and the germs of tuberculosis are found in the fine droplets. Cover the mouth and nose with a handkerchief or paper napkin when coughing and sneezing. Especially should this matter be emphasized as a precautionary measure when the patient is in a house and in close contact with other people.

Let the tuberculous mother know that she is spreading a heavy infection and that she will eventually cause the child to have tuberculosis, if she does not carry out carefully these precautions. The child should be taken away from the "open" case of tuberculosis, if possible; but I realize this will hardly be possible in a number of cases.

Stop the promiscuous kissing of children by grown people. The child should *never* be kissed in the mouth and not at all by the tuberculous.

Everything that comes in contact with the tuberculous patient should be sterlized by boiling—or should be burned if not of any further use. The soiled bed clothes should be kept separate and boiled. The person who waits upon the patient should wash his hands after handling the patient or after handling anything that comes in contact with the patient. Keep the fingers and other objects out of the mouth. This is a thing we all should do whether attending the sick or well.

Any sputum which has been spilled on the floor should be wiped up with a rag which has been soaked in a 5% compound cresol solution. Then pour on more solution and let it stand for an hour on the place where the sputum was spilled.

The bed-ridden case should be isolated as far as possible, and only adults should be allowed

to visit the room. In many cases of this type there is an involvement of the intestines and urinary tracts. The "stools" and urine of such cases should be handled just as carefully as those of typhoid cases. Disinfection may be carried out in these cases by adding to the excreta an equal quantity of 5% cresol solution, or a 3% chlorinated lime solution and letting it stand for four hours.

The disinfection of a room after the removal of a patient should always be carried out carefully. Rubbish should be burned. Linen and all washable things should be wrapped in a clean sheet and boiled. Woodwork and furniture should be scrubbed with either a 5% phenol preparation or a 3% chlorinated lime. The walls should be refinished where possible, and wooden walls should be scrubbed as the other woodwork is treated. There should be no carpets or rugs in the room which can not be properly disinfected afterwards or burned. Follow this by opening the room to ventilation and to the sunlight for a period of at least a week.

Patients who do not cough or expectorate at any time are not of any real danger, provided they have been instructed to use the simple precuations of keeping their fingers and other objects out of their mouths, and of keeping the hands clean, and of not using the same drinking cup or eating utensils.

If we physicians will make a real effort to teach people how tuberculosis is spread from one person to another, it will not be a hard task to get them to use these simple measures of prevention. They should be made to realize that the responsibility rests upon them, after they have had the proper knowledge of the spread of the disease. Let us all remember that the so-called "careless" consumptive *is* dangerous; but that the person who has tuberculosis and who has been instructed properly *is not* dangerous, so long as he carries out these precautions.

DIAGNOSTIC CONSIDERATION OF THE GONOCOCCUS AND OTHER DIPLOCOCCI IN CHRONIC URETHRAL INFECTIONS.*

By THOMAS V. WILLIAMSON, M. D., Norfolk, Va.

The common staphylococcus, growing on the urethral mucous membrane, may take on a diploid form and be Gram-negative. It may be identical in size and shape with the gonococcus and, when it is associated with a history of Neisserian infection, it may be, and frequently is, mistaken for the gonococcus. Indeed, a positive history is not imperative for this mistake to occur. The laboratory detects this degeneration form of the staphylococcus in disturbances of the genito-urninary mechanism, both in children and adults in whose record no history of gonorrhea whatever may be traced. It is a frequent occurrence to find organisms in chronic urethral, prostatic and seminal vesicular discharges which, when treated with the basic analine stains alone, cannot possibly be distinguished from the gonococcus. The micrococcus catarrhalis, an infrequent and mildly active inhabitant of the urethra, is also Gram-negative. Thus, it is clearly evident that, in the class of cases under consideration, a positive diagnosis of gonorrhea cannot be made with uniform accuracy when either the basic analine stains or the Gram method are the sole criteria. The case history, the complement fixation test, and culture, plus the microscopic findings, are the essential elements upon which the diagnosis should rest.

The Case History.—The first few minutes of association with a patient enables the examiner to arrive at a fairly comprehensive opinion of what findings may be expected in the case. Subsequent examination often reveals the fact that the inference drawn from a detailed history is conclusive and correct.

A history of an acute infection, following recent exposure, clearly indicates a pure gonorrheal invasion. But the physician is riding to a fall, if he relies on the history and physical findings alone for his diagnosis. He must find diplococci in the discharge in characteristic numbers, grouping and staining reactions before he can safely say that a given acute urethritis is gonorrheal. Instances of typically acute urethritis occur in which gonococci can never be found. However, this contingency does not frequently obtrude itself into the diagnosis.

This is one extreme. The other extreme presents itself in those cases wherein an infection has persisted for a long time. The longer an infection has lasted the less possibility there is that gonococci will be found. It is rare, indeed, to demonstrate their presence after a

*Read at meeting of Seabord Medical Association of Virginia and North Carolina in Newport News, Va., December 6-7, 1923.

lapse of three years. They usually disappear in much less time than that under careful, adequate treatment. The time limit of three years may be relied upon with a fair amount of certainty. Both laboratory and clinical experience vouch for this conclusion. A recent series of fifty cases of chronic urethritis giving a reliable existence history of over three years, were subjected to culture, complement fixation test, and microscopic examination in this office. In none of them were gonococci found. Therefore, a true history of infection time is of paramount importance.

In those infections occupying an intermediate position between the two extremes, the history also plays a decided role. The unwary may slip up here; while the alert examiner, if his investigations follow the direction pointed out by the history, will clear up many puzzling cases. For example: A patient presents himself with a story of recurring attacks of acute urethritis without fresh exposure. Between the attacks, he is apparently rid of gonococci since none can be found by ordinary examination. Granting that the history is reliable—and in spite of an ingrained propensity in these patients to lie, it is always an excellent practise to do this—an intensive diagnostic study is in order. Repeated provocative therapy to the urethra, prostate and seminal vesicles may set up a reaction on the part of the culpable micro-organisms which permits easy recognition by the laboratory. Negative microscopic findings from a single examination should not be conclusive. Especially is this true if the complement fixation test is positive. Repeated examinations will often succeed where a single one fails. In any case, the history should be given equal rank with the other elements entering into the complex.

From this brief dissertation on the case history, it will be seen that the following conclusions may be made:

(a) A history of acute infection following exposure points with fair certainty to a gonorrheal invasion.

(b) A history of an infection dating back three years or more indicates, almost conclusively, that gonococci no longer exist.

Complement Fixation Test.—The complement fixation test is a modification of the Wassermann technique in which a gonorrheal antigen is substituted in place of the syphilitic preparation. It was first employed in 1906 by Meüller and Oppenheim for the diagnosis of arthritis. They found that it gave a positive reaction in the gonorrheal type of the disease. Swartz and McNeil[1] later applied the test to all forms of the disease.

Briefly, the findings with the test are as follows:

(a) That the results are negative in the first few weeks of a Neisserian infection, due to the fact that sufficient antibodies have not been developed within the blood to induce a positive phase.

(b) That the blood gives a positive reaction after the first few weeks when the gonococcus is undoubtedly present.

(c) That a positive reaction is sometimes obtained in cases apparently clinically cured when all other tests fail to detect the presence of gonococci.

(d) That the test is sometimes positive for weeks or months after clinical cure, by reason of the fact that the system is slow to eliminate the antibodies which gave rise to the positive phase.

(e) That, when a short time has elapsed after clinical cure, it is uniformly negative.

The conclusions arrived at by the pioneers with the test have been abundantly substantiated since that time. They are quite striking and it is rather remarkable that this laboratory procedure has not been more universally employed by the profession. The conclusions are:

(1) A positive reaction, except within the narrow limits described above, is indicative of a focus of infection remaining in the body and is sufficient ground to refrain from pronouncing a cure, to interdict intercourse, and to prohibit marriage.[2]

(2) The gonococcus fixation test is of undoubted value in chronic gonorrheal infections.[3]

(3) A non-gonorrheic does not give a positive complement fixation test.[4]

(4) Positive culture is more certain evidence that an infectious lesion persists than a positive fixation test. Nevertheless, the practitioner will be wise to rely more upon the complement fixation test than upon any thing else for the diagnosis of gonorrhea.[5]

The chief value of the test to the clinician is: (a) The ease and certainty with which unpolluted specimens are obtained. This is not true of culture.

(b) To establish or rule out the presence of gonococci when other means are doubtful.

(c) To determine if an infection is a recurrence or not. Should a specimen, taken within three weeks from the time symptoms appear, be negative, the disease is of recent origin. Should the reverse be true, a recurrence may be suspected.

Culture.—Ever since Bumm (soon after its discovery by Neisser in 1879) succeeded in growing the gonococcus on artificial culture media, the technique has been difficult to carry out and variable in result. A positive culture is, of course, absolute proof of gonorrheal identity. However, the organism is so frequently mixed with other bacteria which tend to obscure it, or kill it in the test tube, and it dies so quickly at a temperature but a few degrees above or below that of body heat, that uniformly accurate results are not achieved by culture. Therefore, a negative return is not conclusive evidence that the urethra or adnexa do not harbor the pathogerm.

The value of culturing the urethral discharges is not confined to the gonococcus alone. There are the Gram-negative micrococcus catarrhalis and the involution or pleomorphic forms of the staphylococcus to contend with. In contradistinction to the gonococcus, which grows only upon specially prepared food, these bacteria thrive luxuriantly on most ordinary culture media. The staphylococcus, in the presence of albumen,[6] may be either Gram-negative or Gram-positive. Its variation in size and shape sets the practitioner an impossible task to distinguish it from the gonococcus under the microscope with diagnostic certainty. Martin, of Norfolk,[7] has shown that these confusing diploid forms of the organism will, on repeated culture and subculture, revert to the true coccus shape and be consistently Gram-positive.

It must be remembered that the micrococcus catarrhalis rather infrequently inhabits the urethra and its appendages. It is troublesome when it does appear but, fortunately, this is not often the case. It is entirely different with the degeneration types of the staphylococcus. They abound there much more freely and are a major source of uncertainty and perplexity when a positive opinion as to definite etiology is desired. It is a great relief to have culture methods clear up this maze.

It would seem that by causing the staphylococcus to revert to type, culture renders its most valuable service.

The writer is inclined to believe that, in many instances, bacteria resembling the gonococcus under the microscope, but which fail to grow as such on culture media, are merely the diploid forms of the staphylococcus to begin with. Instead of diplococci they show as cocci on the culture plate. There is then a reversion to type from pleomorphism in a single culture, no reculture being necessary to identify the staphylococcus. It is quite probable that culture of the gonococcus is much more reliable than it is credited with being, and that the masquerading staphylococcus, through its inconsistent impersonation, is often responsible for the apparent failure of culture for the former organism.

Microspic Findings.—In the early frankly acute stages of gonorrheal urethritis, a positive diagnosis can be arrived at with a reasonable degree of certainty from microscopic findings alone. The organisms are quite numerous, characteristic in intracellular grouping, true to diplococcic form, unassociated with other bacteria, and respond without variation to fresh staining reagents. The discharge is composed principally of polymorphonuclear leucocytes which evidence an active phagocytosis.

As the severer symptoms fade and wane into the declining stages of inflammation, the microscopic picture rapidly changes. Leucocytes diminish in number, phagocytosis is less active, desquamated epithelial cells and mucous filaments appear, and other bacteria become identified with the morphology.

Normally, the urethra harbors an infinite variety of bacterial flora, which is not pyogenic until an avenue of entrance is created for it. The gonococcus opens the gate by passing between the epithelial cells, thus causing a loosening and desquamation thereof. Then the parasites, awaiting without, pass in and become pyogenic. They seem to be more virulent and aggressive, and more resistant to germicides than the gonococcus; eventually, they appear to be the sole survivors in the urethral feeding ground. The morbidity then consists of a secondary infection supplanting or following a primary gonorrheal implantation.

For the most part, these secondary organisms do not take on the microscopic characteristics of the gonococcus. This observation does not

hold good with the micrococcus catarrhalis or the pleomorphic types of the staphylococcus.

The catarrhalis is a true Gram-negative diplococcus but, as a rule, it is not near so numerous as the gonococcus and is much larger. It is a bold outstanding bacterium. It is clean cut and sharply defined. Careful focusing will reveal a faint halo around the gonococcus which tends to make its outline less sharp than its prototype. The gonococcus is usually clumped in small groups while the catarrhalis is more generally disseminated throughout the field. The catarrhalis is not intracellular. From the verbal picture, the distinguishing points are clear. Nevertheless in chronic discharges, where leucocytes are few, where phagocytosis is feeble, and where the gonococcus is swollen in degeneration stages, the inexpert microscopist may become confused.

The staphylococcus may be both Gram-negative and Gram-positive in the same specimen. In shape, it may range from the round coccus to the coffee bean diploid form; while in size, it may vary widely in the same seemingly irresponsible manner. This helter-skelter behavior is what makes the staphylococcus so confusing since somewhere in the great range of variation, it may be about the size and shape of the gonococcus and be Gram-negative. Under such conditions the finger of suspicion naturally points to the staphylococcus, but culture and the fixation test are needed to prove its definite identity.

To the writer, the most striking point in the visual detection of the staphylococcus is its apparent affinity to epithelial cells. It is strongly attracted to them. It appears in greater numbers around or superimposed upon these flat cells than elsewhere in the specimen. When thus situated, it seems to be more uniformly diploid than when it is free or entangled in mucous shreds. In many chronic urethral discharges the only organisms observed will be seen resting on epithelial cells.

Therefore, in such discharges, where there is a considerable percentage of epithelial cells; where there is an absence of true phagocytosis; and where the majority of diploid organisms rest upon epithelial cells, the evidence is strongly presumptive that the staphylococcus is the offender. Indeed, this is a practical certainty.

Thus we see that, in the finer points of diagnosis, the subject of chronic infections in the urethra is rather complex. In dealing with them, the physician would be terribly handicapped if the facilities of the modern laboratory were denied him. Can we wonder then that, in the years gone by, there should have been a generous measure of misconception regarding their etiology? Professional observation of the disease inevitably leads to the conclusion that the vast majority of those who have suffered a gonorrhea have happily married and that from the union no evil consequences have resulted. We know that when there is a transmission of the disease there is also, if the truth be known, almost invariably, a history of recent infection in the partner transmitting it. No prudent man is willing to say how long the gonococcus does or may survive in the male urethra, but experience, plus the aid of the laboratory, gives us the courage to say that when clinical signs of the disease are gone, the danger of transmission is past. An intelligent and unremitting co-operation between the clinician and laboratory expert certainly relieves the gonococcus of much of the odium once attached to it and places the blame at the door of the rightful perpetrator of the trouble—a trouble, which, although it cannot be transmitted to others, may do an immense amount of injury to the genito-urinary mechanism of its possessor.

The necessity for correct knowledge of the etiology of urethral inflammations cannot be overstressed. These morbid processes affect a function which has a vitally important bearing on the happiness of the human race. Dr. Paul B. Barringer says that "the reproduction of species is the goal of individual existence." Since this is so, it follows naturally that a disease which hinders the performance of this function is a distressing calamity. It may prove to be a calamity in two ways. Should a superficial examination fail—as well it might—to reveal the presence of gonococci, the ensuing consequences would be a sad commentary on the carelessness of the practitioner, when the sum of their far-reaching effect is totaled. On the other hand, should an organism masquerading as the gonococcus be mistaken for it, the effect on the patient himself is not pleasant to contemplate. Nothing is more demoralizing and devitalizing to manhood than for an individual to believe that he is a gonorrheal carrier and may remain so for years.

I recall four referred cases in my own work which may serve to illustrate this point quite forcibly to medical men. Two were doctors; two were dentists. All four had had a gonorrhea at some time in life. Slight urethral catarrh yet existed. They desired to marry but dared not do so because diplococci, which has been confused with the gonococcus, had been occasionally found in the urethral smears. An intensive laboratory study succeeded in ruling out the gonococcus. Marriage followed with no consequent regret.

In conclusion, it is safe to say, that nowhere in the broad field of medicine is exact knowledge of the etiology of disease more imperatively essential than in the manifestations dealt with in this article.

BIBLIOGRAPHY.

(1) Swartz and McNeil. Amer. Jour. Med. Science, 1911.
(2) Williamson (a) and Budd (b). Trans. Tri-state Med. Soc., 1914, pp. 151-159.
(3) and (4) Smith and Wilson. Jour. Immunology. Vol. 5, No. 6, pp. 505, 506.
(5) Keyes. Urology, pp. 113, 114.
(6) Crabbtree. Keyes Urology, p. 112.
(7) Williamson (a) and Martin (b). Role of the Staphylococcus in the Genito-urinary Tract. Read before Norfolk County Med. Soc., 1922.
(a) Clinical data.
(b) Laboratory data.

Spratley Building.

FOCAL INFECTIONS.*

By FLETCHER D. WOODWARD, M. D., Newport News, Va.

The title Focal Infection should really grace a comprehensive monograph, but I will make no such attempt. If I should be able to give you a brief resume, and serve to freshen your memories and stimulate the search for them as a cause of disease, I will be content.

In attempting a definition, I will say Focal Infection is a broad term—meaning a circumscribed point of infection, causing remote tissue involvement, not by continuity or contiguity, but by the lymph or blood stream due either to absorbed bacteria or bacterial toxins.

The most frequent sites are the teeth and tonsils, in which locality pus, under pressure by mechanical means of chewing and swallowing, creates diffusion into the blood stream. Other less frequent sites are nasal accessory sinuses, ear, intestine, gall-bladder, appendix, kidney pelvis, seminal vesicles, prostate, uterus, cervix and lymph nodes; others have been reported and still others are yet to be added.

The type of infection most frequently found in some member of the hemolytic streptococcus group or streptococcus viridans, probably because these bacteria are such poor antigens that immunity, if produced, is transient, according to Rosenow. The symptoms caused by these infections are legion and when one goes through the literature of reported cases he is tempted to add to the old adage about syphilis—know focal infection in all its manifestations and you will know medicine. Its study is rapidly changing our ideas as to many forms of chronic diseases, and at the same time making the phrase "etiology unknown" appear less frequently in our text books.

Recently, C. P. Jones[1] reported a clear cut case of "Interstitial Keratitis Due to Apical Abscesses" and, while we all know that syphilis is the cause in the vast majority of such cases yet there have always been cases in which it could not be proven, but focal infection is not mentioned as a possible cause even in our most recent texts.

It might be added here that in all of these types of diseases in which focal infection might play a role we should not stop our search even when syphilis or some apparent cause is found—even in acute appendicitis, gastric ulcer, acute pancreatitis, etc. Our duty has not been fulfilled until a thorough search for them has been made and eradicated, if found.

Realizing that preventive medicine is our ultimate goal, we must constantly search for, and correct these infections from infancy through old age, as our one greatest weapon in attaining this goal. Clinical studies have furnished proof that they are present in a high percentage of the sick, and removal was followed by improvement in general health or cure of the disease present, at which time we have frequently noted an immediate exacerbation of the systemic condition, which is significant of causal relationship, followed by improvement or cure. There are also many cases in which removal has had no effect. These are apparantly due to the fact that the secondary processes are themselves acting as foci.

Autogenous vaccines made from bacteria in the original focus will help in this type of

*Read before the Walter Reed Medical Society, Yorktown, Virginia, October 10, 1923.

case, but here again we also find them of little value at times—perhaps due to the fact that fibrosis has gone on to such an extent that antibodies are unable to reach the focus.

E. C. Rosenow has perhaps done more than any other man to bring our attention to this subject and, while his experiments are often harshly criticized and his results questioned, one need only to review his work to become convinced of his sincerity and the correctness of his conclusions.

He[2] has produced elective localization experimentally in endocarditis, appendicitis, gastric ulcer, cholecystitis, rheumatic fever, erythema nodosum, herpes zoster, myositis, etc., and in these experiments localization has occurred more often in the specific organ than other tissues in the body. These results have all been verified.

He has also produced gall stones and renal calculi in 87% cases in dogs following devitalization and infection of teeth with strains isolated from cases of nephrolithiasis. These conditions he[3] considers hematogenous because the lesions in cholecystitis, ulcer of stomach, pancreatitis and appendicitis, in early stages, are often sharply circumscribed, hemorrhagic, and situated in mucosa, submucosa, or peritoneal coat, with no evidence of diffuse involvement of mucous menbrane, while experiments to produce gastric ulcer by feeding bacteria are unsuccessful, and also failure to produce cholecystitis when injected directly into the lumen of the gall-bladder.

Since streptococci in teeth and tonsils may have elective localizing power, he places them in the front rank of importance as sources of hematogenous infection.

It has been observed repeatedly that acute attacks of the above diseases often follow exacerbations of infection in sinuses, teeth, or tonsils, hence these sources should always be looked for as a routine procedure and, when found, infection about teeth eliminated first. Ulrich has reported that 68% of all artificially devitalized teeth have apical abscesses.

The view of many obstetricians is that foci of infection predispose to eclampsia, abortion and ill health of the foetus. It is borne out by Rosenow's experiments and A. H. Curtis,[4] who reports, that streptococci associated with spontaneous abortion in women tend to lodge in uteri of pregnant rabbits and produce abortion. This view was also advanced by Samuel Downing[5] who says that focal infection is a probable cause of breast abscesses, pyelitis, abortion, nephritis and eclampsia in pregnant women. All pregnant women at the Mayo Clinic who present signs of dental or oral sepsis are subjected to full mouth roentgenograms.

The kidneys are frequently diseased as a result of focal infection. W. J. Mayo[6] says acute nephritis is often due to toxin, not bacteria, from foci in teeth, tonsils, gall-bladder, duodenal ulcer, etc., and especially is this true in those cases of acute nephritis going on to chronicity. He does not believe though that true Bright's is due to this cause.

The hematogenous kidney infections, must be differentiated from the above. Here we have the result of a bacteriemia, not toxins with the possible sequelae of infarcts, perinephritic abscesses, pyonephrosis, calculi, pyelitis, etc. The source of infection here is from distant foci.

C. H. Mayo,[7] speaking of causation of kidney stones, says the infection theory seems the only tenable one to him, but he contends the development of stones requires two factors of infection, i. e., two types of bacteria, one producing a hematogenous infection, and one only coming from some local focus, perhaps only momentarily inhabiting the blood stream; these factors in the presence of mucoid material produce stones, which is analogous to the production of stone in infected gall-bladder, tonsils, etc.

Bumpus and Meisser[8] say that pyelonephritis may often be due to focal infections, harboring streptococci which have a selective affinity for the urinary tract.

We must also bear in mind that pyelitis once developed may itself act as a focus, because India ink injected into the pelvis of a dog's kidney can be recovered in remote tissue, so why not the absorption of bacteria and bacterial toxin?

Eradication of foci should play a big role in the prevention of cardiac diseases. It has been estimated that 180,000 people died of heart disease in the United States last year, and that 200,000 school children have heart lesions today. It is my impression that about 2% of the children admitted to the Manhattan Eye, Ear and Throat Hospital in New York for tonsillectomy, and examined by me, had heart lesions.

Robert Halsey, of New York, says that organic heart disease in children aged five to nine years causes more deaths than any of the so-called children's diseases except diphtheria; it also has a higher death rate among children than pulmonary tuberculosis.

Maurice Lewison[9] says that, in heart block and paroxysmal tachycardia, foci of infection should be carefully looked for, and that the importance of infection as a factor in cardiac failure is too frequently overlooked, and the generally accepted theory of back pressure and cardiac strain should be abandoned in most cases.

As for the thyroid in its relation to focal infection, Stuart McGuire[10] said recently: "While we do not know much about the etiology of exophthalmic goiter, it is a fact that the condition follows frequently some acute disease, and is maintained by a focus of infection. Before beginning treatment of any case the teeth and tonsils, and other possible sources of poison should be determined, and eradicated, if found." He cites one case of severe thyroid toxemia which was completely cured by the extraction of four abscessed teeth, along with supportive treatment.

Crile says that in general 50% of goiters are apparently arrested after removal of any infection, whether it be tonsils, teeth, sinuses, etc., and, in those cases where symptoms persist after operation, it is due to leaving too much thyroid or failure to remove the focus.

Frequently goiter patients date their onset to attacks of tonsillitis and remark that their condition is aggravated during such attacks. I have seen two cases in which acute thyroiditis followed acute tonsillitis.

There is less evidence in the literature of the intestine acting as a focus than teeth, tonsils and sinuses, but we all know it is a frequent source and, when we consider that it contains approximately six hundred times as much lymphoid tissue as the pharynx, one reason is apparent, and also since definite strains of streptococci may be recovered from sinuses or tonsils and also from the stool, it shows us that these masses can become infected.

There are also many cases in which the less frequent sites mentioned at the beginning of this paper have been a cause, but we will not consider them at this time.

I have chosen for this paper the most frequent sites for focal infection, and some of the least considered, but most serious of diseases produced by them, because we are all more or less familiar with the well worked out relation to arthritis, acute rheumatic fever, iritis, etc.

It is interesting to note that I was able to pick out in the literature some fifty odd diseases whose etiology was focal infection. Among them were endocarditis, myocarditis, bursitis, erythema nodosum, purpura hemorrhagica, glaucoma and other various forms of ocular disease, neuritis, herpes zoster, chorea, arthritis deformans, osteomyelitis, cyclic vomiting of childhood, and neuritis of the highly specialized nerves as optic, auditory and olfactory.

We now see that there are many sites in the body where focal infections are possible, and many and varied diseases as the result and, if one bears this subject in mind continually when examining patients, he will be frequently rewarded in curing or improving the condition of his patient, and in preventing serious diseases, which otherwise might occur.

BIBLIOGRAPHY.

1. C. P. Jones. Case of Interstitial Keratitis Due to Focal Infection. Amer. Jour. Ophthal. June, 1923.
2. E. C. Rosenow. Studies on Elective Localization. Journal Dent. Res., 1919, 1, 205-268.
3. E. C. Rosenow. Mayo Foundation Lecture. S. G. & O. 1921, XXXIII, 19.
4. A. H. Curtis. Streptococcus Infection as Cause of Spontaneous Abortion. J. A. M. A. 1916, LXVII, 1739.
5. Samuel Downing. Focal Infection and Its Relation to Obstetrics, Va. Med. Mo., August, 1922.
6. W. J. Mayo. Hematogenous Infection of the Kidney. J. A. M. A., 1919, LXXIII, 1023.
7. C. H. Mayo. Stone in the Kidney. Annals Surgery, 1920, LXXI, 123.
8. Hermon C. Bumpus, Jr., and John G. Meisser. Foci of Infection in Cases of Pyelonephritis. Study 11, J. A. M. A., LXXVII, 1475.
9. Maurice Lewison. Some Recent Advances in the Treatment of Heart Disease. J. A. M. A. Volume 80, No. 12, page 828.
10. Stuart McGuire. Exophthalmic Goiter. Va. Med. Mo., Sept., 1923, 855.

118 26*th Street.*

SOME QUESTIONS AS TO LIFE.

By CHARLES MINOR BLACKFORD, M. D., Staunton, Virginia.

There is nothing of more profound interest to living beings than is the study of life itself, and nothing can be of greater importance than a complete understanding of it, should such an understanding be attained. When the most philosophic of the English poets wrote that

"The proper study of mankind is man," and thereby repeated the dictum of the Latin poet who said: "I am a man, and I consider nothing human alien to me,"* their sayings merely confined to humanity the statement to which we of later days have given wider scope by saying that we are living beings and we consider nothing pertaining to life as unworthy of study. Of recent years much research has been given to life itself—not to what was formerly called natural history; the forms and habits of animals and plants,—but to the nature of life, the characteristics of that force which divides living from non-living bodies; which enables living bodies to perform functions which non-living bodies cannot perform, and which, so long as it persists, gives to the tissues of living organisms the power of maintaining and renewing the chemical combinations of which they consist and which fall apart when life ceases. Like Sidney Smith's celebrated definition of an archdeacon as "A person who performs archiediaconal functions." we can only define life by stating what living beings do. Life has no antithesis: there is no word of opposite meaning. Probably the majority of people would think of "Death" as the antithesis of "Life," but death is only the cessation of life; its last step, so to speak. Non-living things are often spoken of as dead, as in the familiar expression—"As dead as a doornail," but this use is merly a poetic license and the word "dead" cannot in strictness be applied to anything which has never lived. In fact, our ideas as to what constitutes the state which we call "living" are so vague that they cannot be clearly expressed.

There are certain phoenomena usually connected with life, which, to the ordinary untrained observer, seem to differentiate living beings from lifeless ones beyond the possibility of mistake. Before looking into these, it will be well to remember that the microscope has greatly extended our knowledge of living beings and has shown us organisms which are unquestionably alive, but of whose existence the scientists of seventy-five years ago were totally ignorant. The functions and life histories of these tiny bits of matter form as important a part of the great drama of life as do those of the most highly organized animals and plants, and from the study of them we have learned most of the modern science of biology.

*Homo sum; humani nihil a me alienum puto.

On the other hand, the application of new methods of research has shown phoenomena which have greatly complicated the distinction between living and non-living matter which once seemed so clear and sharp.

One of the most obvious manifestations of life is the ability of a living being to move spontaneously. In a sea, lake or stream there are certain things such as logs, fallen leaves and the like, which are only moved by winds, currents or other external agencies. These bodies make up what is called the "plankton," whereas there are other things such as fishes and aquatic animals, which move by their own forces and are not included in the plankton. In general, it may be said that the plankton is non-living, but this is not scientifically true, for fisheggs and the larvae of many aquatic animals form part of the plankton because they are incapable of spontaneous movement, but they are none the less living. Although all living bodies may not be able to move themselves as a whole, it was long thought that any body which can spontaneously move must be living. If we put a drop of pond water under the microscope, we see numberless particles moving with considerable speed in the water and we say that it swarms with life. We may see a small mass of slime throwing out projections in various directions and slowly drawing itself across the microscopic field. We recognize this organism as a living being and we give it the name of *Amoeba limax*, the slug amoeba, and we say that it is alive because it moves. Physicists* have shown, however, that movements of precisely the same character are carried on by substances which cannot, by any stretch of imagination, be regarded as living; movements in oil drops, in organic and inorganic mixtures and even in globules of mercury, which no means at our command can distinguish from amoeboid movements made by protozoa or white blood cells. These movements result from purely physical and chemical reactions which cause changes in the surface tension of the liquids under examination. Leo Loeb† demonstrated that in the blood cells of the horse-shoe crab (Limulus), amoeboid movement depends on stimulation caused by

*G. Quincke. **Annal. d. Physik. und Chem.** 1870 and 1888. Quoted by E. A. Schaeffer, British Association for the Advancement of Science, Dundee Meeting, 1912.

†Loeb, Leo, M. D., Amoeboid Movement, Tissue Formation and Consistency of Protoplasm. **Science**; March 18, 1921, page 261.

changes in the consistency of the protoplasm; a phase of liquefaction being followed by one of hardening. On these phases also depend the agglutinability of the blood cells and the formation of tissues from isolated cells, and they play a part in thrombosis and inflammation. By later experiments he showed that the character of the amoeboid movements may be varied greatly by changes in the consistency of the protoplasm produced by taking up fluid from the surrounding medium, and that the phenomena of wound healing may be imitated by graded differences in the osmotic pressure in the medium surrounding the cells. In brief, these functions which have been regarded as characteristic of life or "vital force," are merely manifestations of physical reactions. As Dastre puts it: "Vital spontaneity, so readily accepted by persons ignorant of biology, is disproved by the whole history of science. Every vital manifestation is a response to a stimulus, a provoked phenomenon. It is unnecessary to say this is also the case with brute bodies, since that is precisely the foundation of the great principle of the inertia of matter. It is plain that it is also as applicable to living as to inanimate matter."‡

All of us have seen the swarms of gnats or other small bodies which gather around a light and keep up a ceaseless dance in the illuminated space. This movement is regarded as a proof that these tiny beings are alive, but, if we observe the microscopic grains of dust suspended in almost any liquid or fine globules of oil suspended in water, we see what is a much similar movement. This spectacle has struck all observers since the invention of the simple microscope, but in 1827 the English physicist Brown gave this movement much study, and since that time it has been known as the Brownian movement. It is an oscillation, a swinging back and forth of the particles and is not attended by any great change in locality. The larger particles move quite slowly while the smaller ones are very active, and those near the limit of microscopic visibility move so swiftly across the field that they can rarely be caught in flight. The character of the liquid medium seems to have no effect on the movement except that it is more lively in alcohol or ether, which are mobile liquids, than in glycerine or sulphuric acid, which are more viscid. It is seen in the tiny bubbles of gas enclosed in the drops of water sometimes found in quartz crystals which were formed in the Plutonian age of the world; it occurs in strongly acid or alkaline liquids which have been heated under pressure to temperatures at which life would be impossible. In other words, it is not a vital phenomenon, and at our present stage of knowledge, its cause is unknown. It is, therefore, evident that motion may go on in lifeless bodies, and that movement cannot be accepted as characteristic of life.

The next great group of phenomena which was long associated exclusively with life, is that connected with growth and reproduction. For a body to begin its existence as a tiny bit of matter; to take in nourishment from a suitable pabulum; to grow to an approximately fixed size and into a fixed form and then to produce other bodies like it, has been held to be a characteristic function of a living organism. That living beings and living beings only are capable of reproducing their kind has been held as a fundamental truth, especially in view of the researches into bacteriology during the past fifty years, and the classic experiments of Koch, Pasteur, Ehrlich and the other founders of modern bacteriology and pathology, seemed to have settled the question beyond a peradventure. "Omne vivum ex vivo" became a commonplace expression in biology, but as we have learned more and more of the properties of matter, the absolute truth of this saying has become open to question. Were we to put it "Every cell springs from a previous cell," we would approach a truth, but it must be borne in mind that a cell is quite a highly organized being. It consists of a nucleus which our staining methods show to be extremely complex in structure, and of a mass of protoplasm which is far more complex than was formerly believed. In other words, although we may accept the statement that cells are not spontaneously generated, we must accept it just as we accept the fact that cats are not spontaneously generated, and remember that between the lowest living matter and an amoeba or a bacterium there lies almost as long a line of evolution as there is between an amoeba and a cat.

With living beings it is found that they begin as very small bodies which are often radically different in form and appearance from the parent. As development proceeds,

‡Dastre. **La Vie et la Mort.** English translation by W. J. Greenstreet, 1911, page 280.

the embryo becomes larger and resembles the parent more closely, and this growth continues until approximately a certain size is reached. The individual then ceases to grow in any marked degree, but gives rise to another organism which, in turn, repeats the same process of development. In general, the germ cell requires a stimulus of some sort to urge it into action, and this stimulus is commonly supplied by union with a germ cell from another individual. This is not essential however. The experiments of Jacques Loeb on the chemical fertilization of the eggs of the sea urchin and the observations of Leo Loeb* on the parthenogenic development of eggs in the ovary of the guinea pig, where in some instances the ova developed in the Graafian follicle up to the formation of the placenta, indicate that some stimulus, other than that supplied by the spermatazoon, may suffice to start development. As the French say: "Ce n'est que le premier pas qui coute" and, if a purely chemical or physical stimulus can originate the process of development, there is no reason why it should not carry it on to its conclusion without the aid of any special vital force.

Those who held or still hold that there is a mysterious "Vital Force" which produces these activities in living bodies find it difficult to explain similar activities in bodies which are unmistakable non-living. An inorganic crystal begins from a tiny nucleus, grows in size and into a shape so definite that it may be taken as a test of the composition of the crystal and, having reached a more or less definite size, will cease to enlarge but will originate new similar crystals. Furthermore, if during the formation of the crystal a facet be scratched or an angle broken, growth will cease and the damage be repaired; a process which is suggestive of the healing of a wound. If a mixed pabulum be prepared; if, for instance, a mixed solution of alum and copper sulphate be allowed to crystallize, the two salts will separate out in the process, and chemists use repeated crystallizations as a means of freeing crystalloids from impurities. In brief, a non-living, inorganic salt appears to develop a body which is true to type, which is able to repair injuries inflicted on it, which will increase to an approximately typical size and will then produce offspring as perfectly as does an animal or plant. It therefore appears that growth and reproduction are not absolutely characteristic of life nor are they dependent on other than the same laws which control inorganic matter.

I cannot go into the work which Leduc and others since his day have done with inorganic colloids which, placed in an appropriate medium, show striking similarities to the growth and fission of living organisms. Even the very complex process of karyokinesis which is preparatory to fission in a cell, can be imitated with a solution of a simple inorganic salt, such as sodium chloride in which particles of lampblack have been suspended, for the carbon particles arrange themselves under the influence of the electrolytes in a manner which a skilled biologist cannot distinguish from those adopted by the particles of chromatin in a dividing nucleus. I would like to mention the problems of latent life in which animals and plants lie until the conditions favorable to their resuscitation come about. I would like to say something in regard to the organic products which were long thought to be elaborated only through the agency of "vital energy"; an idea which fell when Graebe and Liebermann, in 1868, made alizarin, the coloring matter of madder, from its elements and laid the foundation for the wonderful chemical industries of today. It is true that there are many organic compounds which have not yet been made synthetically, but this does not mean that they may not be produced as our knowledge advances. As Huxley put it: "There are many things which are unknown; whether there be anything which is unknowable can be settled only by the future," and one of these is the full answer to the question "What is Life?"

*Leo Loeb, M. D. The Parthenogenic Development of Eggs in the Ovary of the Guinea Pig. **Science**, July 13, 1923. Page 35.

THE INCIDENCE OF HEART DISEASE IN THE NEGRO RACE.

By W. S. WOODY, B. S., M. D., Hopewell, Va.

In approaching the subject of heart disease one does so with fear and trembling. So much has been and is being written on the subject that one hesitates to further tax an already overburdened literature. However, it is not my intention to discuss either the diagnosis or treatment of its various forms, nor to mention the newer instruments of precision which have lately added so much to our armamentarium in attacking this malady. I prefer rather to approach it from the standpoint of the im-

portance of its incidence, especially as to its occurrence in the negro race.

The problem of heart disease is certainly one of the most important which the medical man of today must face. A few years ago Osborne wrote, "Of late years the disturbances of the heart are beginning to assume a more prominent place in the list of causes of death, so that perhaps only tuberculosis and kidney disturbances are more prominent." I think that, if he were allowed to modify this statement in the light of more recent years of experience, he would admit that even these diseases are falling into the background in their order of occurrence.

Life insurance companies are reporting and stressing the fact that there is a constantly increasing death rate from cardiac conditions. It has become a problem which hovers over humanity with a constantly increasing dread; and is of great importance to us—not only from a standpoint of mortality rate, but as a serious economic problem—in the vast army of those who each year are incapacitated for work from this cause.

With typhoid fever, diphtheria, tuberculosis and smallpox, we have learned to cope in a way of which we are justly proud. With other infectious conditions we hope to accomplish that which will in time relegate them to the limbo of the past. "Safety first" campaigns and the instruction of workers in nearly all industrial enterprises are accomplishing wonders in the reduction of morbidity and mortality rate from accidental causes. Much has been and is being accomplished in the prevention and treatment of nutritional and metabolic disturbances. Surgery is forging ahead at a marvelous rate, while the mortality rate from heart disease is on the increase.

In my own practice the alarming occurrence of cardiac diseases has struck me as of very significant relative frequence in the negro race. In fact, the frequence with which I find it, especially in the negro man of forty or over, makes it very hard for me at times to prevent myself from jumping to conclusions. Very often in obtaining a history, HEART flashes across my mind so large that it is with a distinct effort put out of my consciousness while a further history and examination are obtained in an effort to find other possible causes of their symptoms.

A consideration of statistics concerning the mortality rate from cardiac conditions in various states is not amiss, and will be found to be rather impressive. In all states within the registration district from the years 1913 to 1921 there was an increase of from 167.8 to 173.2 per 100,000 population, in the mortality rate of heart disease. Topographically, there is a remarkable incidence of occurrence in the northeastern states as compared with the southeastern. For instance, in the states of Maine, Massachusetts, New Hampshire, New York, Vermont, Rhode Island and New Jersey for the year of 1921, there was an average death rate from cardiac conditions of 209.5 per 100,000 population, as compared with a rate of 108.9 in the seven southern and southeastern states of Virginia, North Carolina, South Carolina, Tennessee, Mississippi, Kentucky and Louisiana—a proportion of nearly two to one. An individual comparison of these states for the year 1921 gives the following figures: Maine, 222.3; Massachusetts, 206.7; New Hampshire, 211.9; New York, 211.3; Vermont, 255.9; Rhode Island, 179.5; New Jersey, 179.; while the southern states for the same year showed, Virginia, 137.3; North Carolina, 109.2; South Carolina, 105.; Tennessee, 94.6; Louisiana, 122.1; Kentucky, 97.4, and Mississippi, 97.

In the southern states a comparison of the death rate between the white and negro race shows a marked preponderance toward the colored; a total average for the seven named southern states being for the year 1921, whites 96.7, while the colored rate was 144.9—or about three negroes to every two whites.

An individual comparison in these states between these races follows: Virginia, white 122.5; colored 172.6; North Carolina, white 99.7; colored 131.2; South Carolina, white 100.1; colored 109.8; Tennessee, white 81.2; colored 151.6; Louisiana, white 105.7; colored 148.5; Kentucky, white 87.9; colored 187.9; Mississippi, white 80.; colored 112.5.

Of all states, Vermont leads with a death rate from cardiac conditions for the year 1921, of 255.9, and an average rate for the years of 1912 to 1921 of 243.6. Next highest comes, for the same ten years, New Hampshire, with an average of 226.8, and the neighboring state of Massachusetts, with an average of 213.8. Montana, off in a district by itself, has the lowest rate for the year 1921, being 90.9, and an average for the last ten years of 98.7, while Kentucky is next lowest with a rate for 1921 of

97.4 and an average rate for last ten years of 103.9.

A comparison of cities with rural districts shows a higher death rate in the cities. For 1921 the average death rate in cities from heart disease was 174.3, while in rural districts it was 141.1. For the last ten years the rate in cities was 178.2, while for a similar period in rural districts it was 145.3. In cities there was an increase from the years 1913 to 1921, of from 171.2 to 174.3, while there was in rural districts a decrease of from 145.8 to 141.1.

Among the states showing the largest increase in death rate from heart disease was Florida, which, from 1919 to 1921, increased from 95.5 to 119.1, for whites and from 102.7 to 119. for colored—a total for both races of from 98. to 119.1, or an increase of 21.1 for 100,000 population in three years. In Maryland, for the years 1913 to 1921, there was an increase from 141.6 to 172.1 for whites, and from 224.7 to 247.2 for colored—a total for both races from 156.2 to 184.7, or an increase of 28.5 in nine years. In Mississippi, for the years 1919 to 1921, there was an increase from 63.3 to 80. for whites, and from 86.9 to 112.5 for colored—a total for both races from 75.7 to 97, or an increase of 21.3 in three years. South Carolina, for the years 1916 to 1921, showed an increase for whites from 84.7 to 100.1, and for colored from 101.2 to 109.8—a total for both from 93.4 to 105, or an increase of 11.6 in six years. In Virginia, for the years 1913 to 1921, the increase for whites was from 104.4 to 122.5, and for colored, from 160.3 to 172.6—a total from 122.1 to 137.3, or an increase of 15.2 in nine years. In Vermont the increase for the years 1913 to 1921, was 231.2 to 255.9, or 24.7 in nine years, while New York, for a similar period, showed an increase from 177.6 to 211.3, or 33.7 in nine years. Some of these figures are rather startling and especially as it applies to the negro race; some states, as for instance Kentucky, showed a preponderance of over two to one as compared to whites.

Not only is this true in the negro adult, but applies to negro children as well. Recently, in a routine examination of negro school children, including both sexes and ranging in age from nine to fourteen years, I found as high as twenty per cent of them subject to unsuspected compensated heart lesions, a majority of them being aortic lesions. The etiological factors in this series were, so far as could be determined, syphilis, diseased tonsils and in a few instances a history of rheumatic fever. The findings in this series of cases is probably out of proportion to what would be found as an average in a larger group. However, the number was sufficient to bring the relative incidence of cardiac conditions in the negro forcibly to mind.

Next in importance to its frequency of occurrence, to my mind, is that the proportion of aortic lesions in the negro far surpasses that in the white. In the negro man of forty or over aortic regurgitation is probably as often met with as all other valvular lesions combined. Aortic stenosis and mitral valve lesions occur about in the same proportion to each other as in whites but, as stated, much more frequently as a whole. Myocardial weakness is, of course, frequently seen in connection with valve lesions and arteriosclerosis. Pulmonary and tricuspid lesions are relatively rare, while purely functional cardiac disturbances are, as a rule, much more rare in the phlegmatic negro than in the more high-strung white.

With these facts before us, the question of why the negro is so much more often the victim of heart disease naturally presents itself. This is probably a question of some individual speculation and variable opinion. A brief survey of some of the more common factors concerned in the production of cardiac conditions and especially those which commonly produce aortic lesions, will probably go a long way in explaining its incidence.

Acute Infectious Conditions—Very often the negro pays little attention to the common infectious diseases in children unless they become severe enough to threaten life. Even should the services of a physician be secured, the parents are prone to disregard advice as to the importance of a prolonged convalescence. As a rule, they consider that as soon as the child himself feels able to leave the bed all danger is over, either disregarding or knowing nothing of the disastrous effect that such a procedure may have on a tired toxic heart. It is very characteristic for them to live today and let tomorrow take care of itself.

Focal Infections, especially diseased tonsils, come in for little consideration as a whole by the negro. Very often the sore throat is treated by external applications or even left to take

care of itself; disregarding the after effects that may arise, the focus is allowed to remain as a constant source of danger to the development of cardiac lesions.

As for *Venereal Disease*, indiscriminate sexual indulgence and lack of regard for personal cleanliness and prophylaxis, together with a lack of knowledge of the seriousness of both the condition itself and its possible consequences, leads to a relatively much higher rate of occurrence of both syphilis and gonorrhea in the negro. Subsequent to its development. their disregard for proper treatment often leaves either a focal infection or a systemic condition—in either case a serious menace to the development of cardiac lesions.

As a rule, the negro is subjected to much harder manual labor than the average white. The constantly increased arterial pressure which results from adrenal stimulation by the increased carbon dioxide in the blood stream tends toward the development of arteriosclerosis and its train of cardiac complications, and often results in the aortic lesions which are so commonly encountered in the middle aged or older negro man.

Thayer found two-thirds of all cases of arteriosclerosis due to over-work, while Reisman believes syphilis to be the more important cause where there is no renal disease. There can be little doubt that the great causes of this high rate in the negro are syphilis and heavy manual labor, and this would explain the relatively higher rate of aortic disease, both being important factors in the production of aortic lesions.

What shall we do to influence this important condition? Shall we fold our hands and be satisfied to do the best we can with our feeble drugs when the victim of decompensated heart lesions at last presents himself for treatment? With how hopeless an outlook must we view our efforts in this line as to their ultimate outcome? No one knows better our inability to replace a diseased valve or to restore to normal functional capacity a diseased heart muscle.

What then can we do? We must realize that, in order to influence the mortality rate from this condition, our efforts must above all things be along the lines of prevention and to this end we must bend our energies: Campaigns against venereal diseases; a more careful search for and more emphatic instructions concerning the importance of the eradication of focal infections; the insistence of a prolonged convalescence in infectious diseases, especially a prolonged rest where on first sitting up the heart shows some form of arhythmia. The modification of cough and support of the heart in all severe respiratory conditions, where the added strain of severe coughing, together with the toxin of the disease strain the heart muscle to the breaking point, are very important considerations in the treatment of these conditions. The warning against the abuse of alcohol is to be mentioned, although this is not so important a factor in the production of heart disease as formerly.

In short, we must realize and bring the public to realize with us that this great subject must be approached from the standpoint of prevention.

New Stewart Building.

PRESENTATION OF THE BRONZE BUST OF DR. RAWLEY WHITE MARTIN TO CONFEDERATE BATTLE ABBEY.

By STUART McGUIRE, M. D., Richmond, Va.

I am keenly appreciative of the privilege that has been accorded me in allowing me, as a representative of the Rawley W. Martin Memorial Association, to make the presentation of his bust to the Battle Abbey.

Dr. Martin was born the year my father was born. They both served in the Confederate Army. They were close personal friends and were frequently associated in professional practice and in matters of public welfare. Dr. Martin was a constant visitor at our home, and from my earliest boyhood I was taught to respect and admire him and to hold him as a model to be lived up to. In later years I had the good fortune to see him often at the bed-side of patients, at the sessions of medical societies and at the meetings of the State Board of Health. I learned to know him and to love him, and I was as intimate with him as it was possible for two men of our respective ages to be; hence the selection of me for this most pleasant task may not be altogether without justification.

In the time allowed me it is impossible to tell the story of his life, which was filled with activities in many and varied fields of work, or to describe the qualities of mind and heart which so endeared him to all who knew him.

I must therefore content myself with a bare sketch of the essential facts of his history in order to have opportunity to emphasize the military side of his career.

Dr. Martin was born in 1835. He received his academic education at the University of Virginia and graduated in medicine from the University of New York in 1858. He located in Chatham, Va., and began the practice of his profession in 1860. At the outbreak of the War Between the States he was offered a commission as a medical officer, but declined it and entered the army as a private. His courage and efficiency soon became recognized and he received rapid advancement. He commanded a company at Malvern Hill, a regiment at Gettysburg, and at the time of the surrender at Appomattox papers were in transit promoting him to the rank of Brigadier General.

At the close of the war, Dr. Martin returned to Chatham and resumed the practice of medicine. In 1867 he married Miss Ellen Johnson of Pittsylvania County. In 1895 he moved from Chatham to Lynchburg where he lived until his death in 1912.

Dr. Martin always spoke of himself as a country doctor but, while he embodied all the virtues of that character so dear to literature, there was nothing provincial in his point of view or scope of work. To his patients he was not only a beloved physician, but a trusted counselor as well. To his community he was an alert, broad-minded citizen whose views had weight in matters of Church and State. To his profession he was an example of industry, ability, learning and high ethical standards. To his family and friends he was a modest, lovable, patient Christian gentleman whose heart knew no evil and whose soul feared no danger.

Dr. Martin's activities won him many public positions of honor. He was a member of the Board of Visitors of the Virginia Military Institute and of the University of Virginia. He was one of the founders and for many years the President of the Medical Examining Board of Virginia. He was at the time of his death President of the State Board of Health, and he was largely responsible for the establishment of the State Tuberculosis Sanatoria which have done such useful work. He was active in many medical organizations and was unanimously elected President of the Medical Society of Virginia, the highest honor in the power of the medical profession of the State to bestow.

It is Dr. Martin's war record that must be stressed on this occasion. It is a crowded narrative of splendid service. He was at Big Bethel, Seven Pines, the Seven Days' Campaign, Second Manassas, Sharpsburg, Harpers Ferry, Fredericksburg, the Suffolk Campaign and Gettysburg. Tributes to his gallantry in the performance of duty are unstinted, and in a number of cases are embodied in official reports.

General Clement A. Evans in his Confederate Military History relates this incident: "Fletcher Harwood, color-bearer of Company K, was cut down by a shell at Malvern Hill, and as recorded in the War Records, instantly Captain Martin seized the flag and with words of encouragement called on all to follow. The noble, manly conduct of Captain Martin was such as to challenge the admiration of all." Colonel Tomlin's report of the final charge that evening contains the following: "The different members in our regiment were formed into one company under command of Captain Martin whose gallantry was not exceeded by anyone in that memorable battle." The regiment lost 30 killed and wounded out of 128 in action.

The charge of Pickett's Division at Gettysburg and the part played by Dr. Martin is described as follows in an article written after the war by the Rev. James E. Poindexter of Maryland who was Captain of one of the Companies of the 53rd Regiment and personally participated in the assualt:

"During the cannonade which preceded the charge, Colonel William R. Aylett, commanding the 53rd was wounded and retired from the field. The command of the Regiment then devolved on Colonel Martin, and as the 53rd was the 'batallion of direction' of Armistead's Brigade, he was thus thrown during the whole subsequent advance in the very closest contact with that heroic chief. As we neared the enemy, General Armistead, at the request of General Kemper, gave the order 'double quick' and the 53rd, led by Lt. Col. Martin, rushed forward with other regiments of the Brigade, through the storm of shot, and gained the stone fence behind which the Federals had lain. Here the men halted, and then it was that Colonel Martin displayed, in full view of

friends and foes, that brilliant courage which marked him out as 'the bravest of the brave.' He mounted the fence and calling aloud 'forward with the colors' leaped down on the side nearest the enemy and strove by voice and gesture to urge on his men. He was the first man in Pickett's Division to scale that fence. And now the intrepid Armistead, his hat on the point of his sword, followed Colonel Martin over the fence, and called on the gallant band that rushed over after him to make one supreme effort to carry the heights. 'Give them,' he cried, 'the cold steel.' But alas their splendid valor was displayed in vain. The Federals poured in a withering volley and Colonel Martin, his thigh bone dreadfully shattered, fell unconscious, not four feet from the lamented Armistead.

"It may give some idea of the terrible loss sustained by Armistead's Brigade when I mention that after the few who survived the charge returned to the point from which they started, Lieutenant Bilharz took command of the 53rd, and Major Joe Cabell of the 38th Regiment, took charge of the Brigade.

"In view of these facts, and they are facts for which many now living in Pittyslvania County, Virginia, are ready to vouch—I respectfully submit that if Pickett's Division deserves the praise which its behavior at Gettysburg has won alike from friend and foe, then the name of Rawley W. Martin is worthy of imperishable honor. I would not detract from the fame of Armistead and Pickett. Their noble deeds have passed into history. Their names can never be forgotten. But the man who outstripped Armistead himself in the path of glory, the man who in the face of fearful odds dared to advance beyond all others, the man who climbed with unfaltering step that rocky barrier and led the dauntless band that followed into the very jaws of death need never blush to see his name coupled with theirs. The county which gave him birth, the state for which he shed his blood, might well glory in his valor. But his modesty is equal to his courage, and so it is that his matchless valor has not received that public recognition which it richly merits."

I am happy that this complaint is no longer true. I am glad that a permanent memorial will now be placed in such a beautiful and historic building. I am proud as the spokesman of the Rawley W. Martin Memorial Association to present to the Battle Abbey a bronze bust which bears the following inscription:

RAWLEY WHITE MARTIN, M. D.
LIEUTENANT COLONEL 53RD VIRGINIA INFANTRY
C. S. A.
Born 1835; Died 1912

"He commanded his Regiment forming Armistead Battalion of Direction in Pickett's Charge at Gettysburg on Cemetery Ridge. A tribute from his friends in commemoration of his devotion as a soldier, physician and citizen to the highest ideals of duty and service."

PRESENTATION OF THE PORTRAIT BUST OF DR. HUNTER HOLMES McGUIRE TO CONFEDERATE BATTLE ABBEY.

By DON P. HALSEY, LL. D., Lynchburg, Va.

MR. CHAIRMAN, DR. HODGES, LADIES AND GENTLEMEN: In the sixty years that have rolled around since the great War between the States, the fact has become clearer and more distinct to every thoughtful student of history that the most valiant, the most heroic, the most efficient, the most brilliantly led, and the most wonderful army in all respects that ever marched and fought upon this planet was the Army of the Northern Virginia. Its infantry, its cavalry, its artillery were alike matchless and incomparable, and in the vitally important department of its staff it was also thoroughly well equipped and served. In its medical and surgical staff, especially, was it fortunate in the character of the men who composed it. Handicapped as they were by lack of supplies, they nevertheless fulfilled through their ability and fidelity the requirements of their arduous duties in a manner beyond all praise. At the head of the Medical Department of Stonewall Jackson's army, and after Jackson's death as the medical director of the Second Army Corps until the end of the war, was Dr. Hunter Holmes McGuire, a man whose great figure now looms up in history in even nobler and more commanding outlines than during the days of his masterly achievements. To all Virginians, and to all men of his profession throughout the world, his name is familiar as that of a brilliant physician, a surgeon of surpassing genius and a teacher of preeminent power. It is not, however, as a great examplar of the highest

achievements of a noble profession that we wish to honor him here today. That would anyhow be a work of supererogation, for already have his praises in his chosen life work been sounded by eloquent tongues, and recorded by brilliant pens, and his niche is secure and high in the temple of fame. It is to Hunter McGuire the patriot that we now desire to give homage. The great surgeon, the eminent teacher, the president of all the highest associations of medical and surgical scientists, the founder of a great medical college and of a great hospital, has already received the highest honors that can be bestowed upon one to whom such honors are possible. Today we place him as a soldier of the Southern Confederacy among his comrades of the days of yore, and wreathe upon his brow the immortelles that belong to those who for four long years on glory flooded fields struggled to maintain the empire of principle in the earth, and who with honor untarnished and consciences inviolate fought desperately for the cause they knew to be right. If those bronze lips could speak I doubt not that they would say that Hunter McGuire would not exchange the honor of having fought under the starry and stainless flag of the Confederacy for all the other honors that were heaped upon him, for all the gold piled up in treasury vaults, or for the costliest diadem that ever sparkled in a monarch's crown.

To you then, Dr. Hodges, as the representative of R. E. Lee Camp No. 1, on this occasion, I have the honor to commit, on behalf of his worthy and distinguished son, this portrait bust in bronze of Hunter Holmes McGuire, Doctor of Medicine, Doctor of Laws, a soldier of the Confederacy who followed and fought with Stonewall Jackson, and whose name will forever be associated with his among the tenderest, the most precious and the most glorious memories of the "Storm cradled nation that fell."

Analyses, Selections, Etc.

The Relationship of the Ion Content of the Cell to Symptoms of Disease with Special Reference to Calcium and Its Therapeutic Application.

F. M. Pottenger, Monrovia, Calif., discusses the physio-chemical changes of the cell normally and pathologically. He believes the "action of the cell may be carried on independently of the correlating and integrating forces of the two great systems of body regulators, the nerves and the incretions; but full and purposeful activity requires a co-ordination of all regulatory forces," but the nerve or incretion action is also dependent on the chemical and physical state of the cell. If the physio-chemical equilibrium of the cell is disturbed beyond certain normal limits then symptoms of disease appear. He believes intake of the fundamental inorganic salts as important in cell metabolism as the intake of proteins, carbohydrates and fats.

Tables are given showing the cellular, liquid and chemical content of the blood, and he mentions that certain salts are antagonistic to each other when present in certain organs.

The author believes that besides nervous symptoms and glands of internal secretion other forces yet unknown to science control the metabolic process of the cell.

The calcium salts seem to be bound up with the sympathetic nervous system and act very much in the manner of suprarenin. He bases this on experimental work done on the heart, intestines and other organs under sympathetic control. It is suggested that the thyroid, pituitary and parathyroids have to do with calcium retention in the body, while the gonad system has the opposite effect.

Clinically, calcium strengthens the systole of the heart, relaxes the musculature and reduces the secretions of the respiratory system through its effect on the sympathetic and opposes the parasympathetic action.

With calcium or suprarenin the sympathetic nervous system can be stimulated to such a degree as to overbalance the parasympathetic nerves. On the other hand atropine inhibits parasympathetic action while pilocarpin stimulates it.

The author further believes that a great many more visceral diseases are attributable to the vegetative nervous system than have been heretofore generally accepted.

Therapeutically, he suggests the use of calcium or adrenalin, or both, for sympathetic stimulation, or atropine for parasympathetic inhibition in the following: (1) anaphylaxis; (2) serum reactions; (3) urticara; (4) asthma; (5) hay fever; (6) bronchitis; (7)

affections of the gastro-intestinal tract. The sphincters have the opposite innervation.

He does not suggest this therapeusis as a cure-all but believes it to be of great value in these types of cases. Five c. c. of a five per cent solution of calcium chloride in ampules is used intravenously at intervals of two days to a week. Injections should be made slowly, requiring five to ten minutes. The reaction, if any, consists of warmth, constriction of the throat, or burning in rectum. These pass off in a few miutes. (*Annals of Clinical Medicine*, Nov., 1923, Vol. 2, No. 3).

H. R. MASTERS.

The Truth About Medicine

In addition to the articles enumerated in our letter of December 1st, the following have been accepted:

Cutter Laboratory
- Anti-Anthrax Serum for Human Use—Cutter.
- Diphtheria Toxin-Antitoxin Mixture—Cutter.
- Diphtheria Toxin for the Schick Test—Cutter.
- Rabies Vaccine-Pasteur—Cutter.
- Tetanus Antitoxin for Human Use (Concentrated)—Cutter.

E. R. Squibb and Sons.
- Diphtheria Toxin-Antitoxin, 0.1L+.

Winthrop Chemical Company,
- Elixir of Veronal.

NEW AND NON-OFFICIAL REMEDIES.

National Radium Emanator.—A portable appliance for activating water with emanation; the emanation is emitted from a solution of radium chloride, barium chloride and sodium chloride. The appliance is claimed to produce 40 microcuries (150,000 Mache units) of radium emanation to 1,000 c.c. of water daily. The actions, uses and dosage of radium are discussed in New and Non-official Remedies, 1923, p. 255. National Radium Products Co., New York. (Jour. A. M. A., December 8, 1923, p. 1953).

Iodostarine-Roche.—Diiodotariric Acid.—An iodine addition product of tariric acid, derived from the fruit of a species of Picramnia. Iodostarine-Roche contains 47.5 per cent. of iodine. It acts in the tissues similarly to inorganic iodides. It is not broken up in the stomach, but a portion of the iodine is split off when it enters the intestine. The undecomposed portion is readily absorbed and, as in the case of other fats, is largely deposited in the tissues where it is slowly split up. The action of iodostarine-Roche is exerted more slowly than that of the inorganic iodides. Iodostarine-Roche is supplied in the form of tablets iodostarine-Roche 0.25 Gm., and as chocolate tablets iodostarine-Roche, containing iodostarine-Roche equivalent to iodine 0.01 Gm. Hoffmann-LaRoche Chemical Works, New York. (Jour. A. M. A., December 15, 1923, p. 2032).

Tetanus antitoxin for human use—Cutter.—Tetanus antitoxin, concentrated (see New and Non-official Remedies, 1923, p. 284), marketed in syringes containing 1,500 and 5,000 units each. Cutter Laboratory, Berkeley, Calif.

Diphtheria toxin-antitoxin mixture—Cutter.—Diphtheria toxin antitoxin mixture (see New and Non-official Remedies, 1923, p. 284), each c.c. representing 3 L+ doses of diphtheria toxin neutralized with sufficient antitoxin to conform to the toxicity requirements of the U. S. Public Health Service. It is marketed in vials containing, respectively, 1 c.c. and 50 c.c., and in syringes containing one immunizing treatment. Cutter Laboratory, Berkeley, Calif.

Anti-anthrax serum for human use—Cutter.—An anti-anthrax serum (see New and Non-official Remedies, 1923, p. 287), marketed in double-ended vials containing 50 c.c. for intravenous injection. Cutter Laboratory, Berkeley, Calif.

Rabies Vaccine-Pasteur—Cutter.—An anti-rabic vaccine (see New and Non-official Remedies, 1923, p. 294), prepared according to the method of the Hygienic Laboratory of the U. S. Public Health Service. The emulsion from the cord is shipped daily and is diluted at the time of injection. The treatment consists of twenty-one daily injections. Cutter Laboratory, Berkeley, Calif.

Diphtheria toxin for the Schick test—Cutter.—A diphtheria immunity test (see New and Non-official Remedies, 1923, p. 323), marketed in packages of two vials, one containing diphtheria toxin and the other physiologic solution of sodium chloride for dilution. Cutter Laboratory, Berkeley, Calif.

Capsules Carbon Tetrachloride (human use)—P. D. and Co.—A brand of carbontetrachloride—N. N. R. It is marketed in capsules containing 20 minims. Parke, Davis and Co., Detroit.

Elixir of Veronal.—Each fluid drachm contains veronal (see New and Non-official Remedies, 1923, p. 63), 2 grains in a menstruum containing alcohol 33.5 per cent. Winthrop Chemical Co., New York.

Diphtheria Toxin-antitoxin Mixture (new formula)—Squibb. Diphtheria toxin-antitoxin mixture (see New and Non-official Remedies, 1923, p. 284), containing in each cubic centimeter 0.1 L+ dose of diphtheria toxin neutralized with the required amount of diphtheria antitoxin. Marketed in packages of three vials, each containing 1 c.c., and in vials containing, respectively, 10 c.c. and 20 c.c. of the mixture. E. R. Squibb and Sons, New York. (Jour. A. M. A., December 23, 1923, p. 2115).

PROPAGANDA FOR REFORM.

Liquid Petrolatum as a Laxative.—Liquid petrolatum is indigestible. It is not absorbed, and, therefore, cannot produce poisoning. In ordinary quantities the administration of liquid petrolatum does not seriously impair the alimentary efficiency. Like all laxatives used in very large quantities, liquid petrolatum may diminish the degree of utilization of food by promoting evacuation before the functions of digestion and absorption can be entirely completed. Liquid petrolatum may produce gastric distress and, therefore, should be taken in a way to interfere least with gastric digestion by administration before bedtime or an hour before meals. In reporting on a proprietary brand of liquid petrolatum widely exploited to the public, the Council on Pharmacy and Chemistry warned that constipation should be treated by dietary and hygienic means, as evacuants are but temporary measures. It further cautioned that liquid petrolatum is medicinal: it modifies greatly the intestinal flora; it acts as a lubricant and emollient; it modifies the absorptive powers of the intestinal mucous membrane; it is capable of influencing the digestion of fats; and, in short, liquid petrolatum is a drug, the indiscriminate and excessive use of which should not be en-

couraged. (Jour. A. M. A., December 1, 1923, p. 1896).

Spahlinger Treatment for Tuberculosis.—Spahlinger is a resident of Geneva, who received medical training but took his degree in law. Later he abandoned law for research work. The Spahlinger treatment makes use of vaccine and serum therapy. The theory from which the treatment is evolved is that the tubercle bacillus emits different toxins under varying conditions of temperature, environment, etc. Many of these are claimed to be isolated as either exotoxins or endotoxins. The vaccines—of which there are said to be about twenty—are used for prophylaxis for treatment of the milder cases of tuberculosis and for the production of the various serums used in the treatment of the more severe cases. It has been reported that the British ministry of health is prepared to encourage the experimental trial of the Spahlinger preparations under scientific supervision. The British Red Cross has appropriated money to enable Spahlinger to work on a larger scale in the production of his preparations. The reports in regard to the efficacy of the preparations which have appeared in British medical journals are conflicting, and the Red Cross organization has made it clear that the products are in the experimental stage. (Jour. A. M. A., December 1, 1923, p. 1896).

Does Heat Injure Vaccines?—It is generally believed that vaccines lose in potency on standing at room temperature. But so far as known, the sterilization of vaccines by heat does not injure the antigenic potency any more than other methods of sterilization, e. g., chemicals. The astounding deduction of a manufacturer of vaccines that heat sterilization, at a definite temperature for a given time must be highly injurious, because vaccines lose in potency on standing for weeks and months at variable room temperature, is simply a pseudoscientific statement intended presumably to bolster up the merits of the advertised wares in the eyes of the more or less thoughtless purchasers. (Jour. A. M. A., December 22, 1923, p. 2135).

Book Announcements

The American Illustrated Medical Dictionary (Dorland). A New and Complete Dictionary of Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred Branches; with the Pronunciation, Derivation and Definition. By WM. A. NEWMAN DORLAND, M. D., F. A. C. S., Member of Committee on Nomenclature and Classification of Diseases, of the A. M. A. Twelfth Edition, Revised and Enlarged. Philadelphia and London. W. B. Saunders Company. 1923. Large 8vo of 1,296 pages with 338 illustrations, 141 in colors. Flexible leather, $7.00 net; thumb index, $8.00 net.

The present edition measures up well with claims made for this dictionary in the past. This edition has been increased by sixty-nine pages, with a total of over 3,000 new words. Included in these are many new dental words with definitions. This fact adds greatly to the value of the book, owing to the close relation now existing between medicine and dentistry. The elaborate tables given are a most valuable aid. These too have been revised to the last minute.

It is with interest we note that the publishers secured for special work in this edition the services of Dr. E. C. L. Miller, professor of bacteriology and biochemistry at the Medical College of Virginia. It is stated that he "has checked every chemical word in the book, including all drugs and proprietary medicines, giving special attention to the accuracy of definitions and chemical formulae and to the completeness and inclusiveness of the vocabulary. He has also revised and added to the terminology of Bacteriology, Parasitology, Immunology, Public Health, and Genetics." To our many readers who are familiar with Dr. Miller's painstaking work, this feature alone would commend the dictionary in question.

Medical Record Visiting List or Physicians' Diary. Revised. New York. William Wood & Company. Medical Publishers. Sixty patients per week record. Price, $2.00 net.

This is the usual weekly visiting list with space opposite each name for special memoranda. The forepart contains twenty-seven pages of helpful hints in emergencies of various kinds, and will at times be found very useful. The book is bound in flexible leather, and contains a pocket for memoranda slips.

Operative Surgery. Covering The Operative Technic Involved in the Operations of General and Special Surgery. By WARREN STONE BICKHAM, M. D., F. A. C. S., New York. Former Surgeon in Charge of General Surgery, Manhattan State Hospital, New York; Former Visiting Surgeon to Charity and to Touro Hospitals, New Orleans. In six octavo volumes totaling approximately 5,400 pages with 6,378 illustrations mostly original, and separate Desk Index volume. Now ready—VOLUME I containing 850 pages with 921 illustrations, and VOLUME II containing 877 pages with 1,088 illustrations. Philadelphia and London. W. B. Saunders Company. 1924. Cloth. $10.00 per volume. Sold by subscription only. Index Volume free.

Neurologic Diagnosis. By LOYAL EDWARD DAVIS, M. S., M. D., Ph. D. in Surgery. Assistant Professor of Surgery, Northwestern University Medical School; Fellow of National Research Council 12mo. 173 pages with 49 illustrations. Philadelphia and London. W. B. Saunders Company. 1923. Cloth, $2.00 net.

Hernia. Its Anatomy, Etiology, Symptoms, Diagnosis, Differential Diagnosis, Prognosis, and Operative Treatment. By LEIGH F. WATSON, M. D., Associate in Surgery, Rush Medical College, Chicago. 232 original illustrations by W. C. SHEPARD. St. Louis. C. V. Mosby Company. 1924. 8vo. 660 pages. Cloth, $11.00.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.

B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 50 FEBRUARY, 1924 No. 11

Editorial

Cholelithiasis.

Last month, editorially, we considered the acute forms of the diseases of the gall-tract. Stress was laid upon the importance of interpreting symptoms, often very meager and indefinite. A brief comment was made upon the nature and cause of these forms. The etiologic relation of primary foci of infection to gall-tract infection was pointed out, illustrating the connection by Rosenow's well-known work which showed the relation of tonsil and teeth infections to gall-tract infection, by the well established relation of typhoid infection to gall-bladder diseases, by the clinical connection or assocation of pneumococcus infection and gall-tract disease. The probable antecedent existence of these primary infections of the gall-tract, probably in the more subacute and less virulent types, to gall-stone formation, was also suggested as very probable, although the state of the bile elements (especially cholesterin) were in mind as forming a small percentage, without previous inflammation of the gall-tract mucous membrane.

Paramount importance was laid upon the need of recognition of these pathological states in the gall-tract through a keen and interpretative attitude of mind on the part of physicians as they view the passing throng of patients complaining of digestive disturbance —the "dyspeptics."

Now we desire to direct our reader's thought to the following comments on cholelithiasis, or the gall-stone-stage of gall-tract disease. One must be impressed with the probable uselessness of our comments when one reflects upon the vast amount of "literature" in current publications during the last six months. To show how fully the subject has been covered, we might call the reader's attention to a good index of the articles appearing in the world's medical current publications in the latter half of 1923. The Index Number of *The Journal of the American Medical Association* (December 29, 1923, Vol. 81, number 26, page 2,233), under "Gall-bladder," shows the following titled contributions on the subject: Gall-bladder calculus and pregnancy; g. calculus and transduodenal choledochotomy; g. calculus, differential diagnosis; g. calculus, digestive hemoclastic with; g. calculus, digestive juices with; g. calculus, ileus from; g. calculus in common duct, diagnosis and management of; g. calculus is cause, not result of infection; g. calculus, mutual influence of gastro-intestinal tract and; g. calculus, nocturnal colic with; g. calculus, orthology and pathology of extrahepatic bile ducts in their relation to; g. calculus, pathogenesis of; g. calculus, production of; g. calculus, "recurrences" after operations for; g. calculus, roentgenography of; g. calculus, surgical treatment for; g. calculus, time element in formation of; g. diseases, achlorhydria in; gall-bladder disease in childhood; g. disease, reaction in colon to; g. drainage, nonsurgical; g. evacuation reflex; g. infection; g. infection, pancreatitis as related to; g. inflammation, gastric secretion in; g. inflammation, indications for surgery in; g. inflammation, masked; g. bladder inflammation without gall-stones; and others.

The foregoing list of titles, gathered by a careful agency, covering papers published during the preceding half-year on the subject of gall-bladder, points to the widespread interest in the subject. The large number of papers indicate, besides, the frequency and incidence of the condition. A thoughtful perusal of this list of publications rather indicates, as before stated, that the predominance of interest in this subject by the profession is in the late type of gall-bladder disease as illustrated by the formation of gall-stones. As one sees, the antecedent phases of gall-tract disease,

Roentgenogram showing gall stones removed by operation.

namely, cholecystitis and cholangitis, have not claimed the study and publication to any considerable extent during the past six months. Should this be taken as an indication that the primary conditions just mentioned are overlooked by the physicians? Is it true cholecystitis and cholangitis do not "register" until the gall-stones assert mechanical and inflammatory changes? It is to be hoped that more work will be done and more publications given hereafter in dealing with the primary diseases of the gall-tract with special reference to the etiology, symptomatology and prevention. When the profession becomes alive to the inaugural stages of cholelithiasis and applies preventive measures, there will occur less of the pathology which we now are compelled to consider at such length in current literature. These observations, however, in no wise alter the fact that there is a high degree of incidence of gall-tract infection with gall-stones.

Causes of Gall-Stone Formation

An excessive concentration of cholesterin may be a non-infective cause of calculus. The normal amount of cholesterin in bile is from 20 to 80 mgm. per 100 cc. of bile; in blood from 130 to 180 mgm. per 100 cc. of blood. It is conceivable that a prolonged excess of cholesterin in bile may be precipitated in the stagnation of the balance of the gall-bladder and the formation of gall-stone to take place. A pure cholesterin calculus results.

But infection is the chief cause of gall-stone formation. The typhoid, paratyphoid and colon bacilli from the intestinal tract, streptococci from the mouth, and pneumococcus from the respiratory organs should be mentioned as the chief microorganisms of cholecystitis and gall-stone formation. Conditions which may cause concentration of cholesterin or may produce stagnation of bile are frequently the associated causes with microorganisms, above mentioned, of gall-stone formation. So it is met with in obesity, tight lacing, and visceroptosis. Associated with cholecystitis and gall-stones, we not infrequently have an acute appendicitis.

The Time Element and Number

Gall-stones may form in fifty days; recently in the *Journal of the A. M. A.* (Nov. 17, 1923, page 1,671) a case is cited in which gall-stones

formed in eighty-six days; but far more frequently months are required to form gall-stones. Gall-stones may exist and be quiescent for years. There may be one or many. They vary in form and density. In more than half of the cases the gall-bladder is the site of calculi. There may be pure cholesterin calculi. There may be pure cholesterin calculi coated with bilirubin calcium, this constitutes about twenty per cent of all gall-stones and may be taken as an evidence of an inflammation occurring in the gall-tract subsequent to the formation of the cholesterin part of the calculus. There may be mixed cholesterin and

Cholecystitis chronica with a stone in the cystic duct. (After W. C. MacCarty. "Collected Papers by the Staff of St. Mary's Hospital, Mayo Clinic," published by W. B. Saunders Co., Phila.) Taken from Barker's "The Clinical Diagnosis of Internal Diseases," Vol. II).

bilirubin calcium calculi. These are the most common and may be taken as an evidence of infection. There may, however, be pure bilirubin calcium calculi. These result from a precipitation of bilirubinate of calcium produced by an inflammatory exudate in the ducts. There are also certain rare chemical formations: as incompletely formed cholesterin gravel, calcium carbonate stones, calculi with foreign bodies in the center.

Dyspepsia's Role in Clinical Picture

The beginning symptoms of gall-stone, as the initial symptoms of cholecystitis and cholangitis, may masquerade as stomach symptoms. In this way attention is drawn to the stomach, to food taking and indigestion—or to "dyspepsia." The patient complains after eating food—not of the gall-tract but of the stomach. There is a heaviness, a fullness, a distention after eating. He belches after awhile and is relieved of oppression, he probably has heartburn, a distinct discomfort or pain under the right costal border on deep breathing. He suffers from flatulence, dull pain in right hypochondrium, and a pain located under the right shoulder blade.

Mechanical Effects of Gall-Stones

There are certain mechanical effects of gall-stones when they exist in sufficient number or size. A collection in the gall-bladder may produce a pyloric stenosis, obstruction of the common duct, or compression of the portal vein. Impaction of a stone in the cystic duct may set up biliary colic, and, if persistent, produce distention of the gall-bladder, with bile and mucus. This condition may bring about enormous distention of the gall-bladder, a thinning of its wall and a cystic degeneration of its contents. The process may result in a chronic inflammation and atrophy of the gall-bladder. The presence in the common duct of gall-stones may set up attacks of biliary colic. There may be one stone, but the whole duct may be filled with stones. The impaction of the common duct may be the cause of jaundice.

The duct may dilate, however, and relieve the impaction, permitting the bile to flow. In impaction there may be hepatic fever and other symptoms of systemic involvement. It is possible to have a spontaneous cure by the discharge of the calculus into the duodenum. But long before this, surgical treatment should be sought. In the ampulla of Vater, a gall-stone may be lodged and, if of sufficient size, may produce an obstruction. This may cause the bile to flow into the duct of Wirsung, bringing about an acute hemorrhagic pancreatitis. The obstruction of the intestines by a gall-stone occurs, but is rare. Only recently a case has been noted in the literature. Such patients were frequently over fifty years.

Inflammatory and Infective Changes Due to Gall-Stones

With gall-stones in the gall-bladder, inflammatory changes are prone to persistently

reoccur and chronic cholecystitis to supervene. Ulceration, diverticula, scars, hour glass contractions, are some of the changes that follow. In addtion a recurrent or chronic pericholecystitis may exhibit adhesions between the gall-bladder and adjacent pylorus, duodenum, transverse colon, and omentum. In such a mass of pathology we may obtain symptoms largely simulating dyspepsia.

News Notes

In Memoriam

WOODROW WILSON

Twenty-eighth President of the United States of America.
Born at Staunton, Virginia, December 28, 1856,
Died at Washington, D. C., February 3, 1924.

To the Physicians of the State:

I wish to inform you regarding the activities of the present legislature with respect to matters concerning doctors and the practice of medicine.

At the beginning of the session a bill was introduced in the House and Senate, re-imposing a license tax on doctors. I at once called together the Legislative Committee, and Dr. Williams, Chairman of the Executive Committee, called together the Council of the Medicial Society of Virginia. The Council instructed the Legislative Committee to do everything in its power to defeat the bill, whereupon the Committee busied itself, and with the backing of the component societies and the doctors all over the State, we defeated the bill, as the House Committee passed it by indefinitely and the Senate Committee on Finance reported it out, with the recommendation that it not pass, only three voting for it, and twelve against it.

Dr. W. G. Painter, President of the Wise County Medical Society, in a letter to his Senator, said, in part:

"The physicians of the State will regret very much to see the time come when they shall be looked upon as a purely commercial or revenue producing body, either by themselves or the State. We have higher ideals than this. We aspire to a service far beyond that which can be in or hedged about by mere dollars and cents."

Up to this time, we have been successful also in keeping off any legislation offered by the chiropractors. I doubt very much if they will introduce any further bills during this session.

The Legislative Committee, after consideration, thought it wise to let the Medical Act remain as it is for the present.

Respectfully,

H. U. Stephenson, M. D.,
Chairman, Legislative Committee, Medical Society of Virginia.

Legislative Activities of Medical Society of Virginia.

In view of the interest being manifested by doctors throughout the State in medical matters before the present legislature, we asked Dr. H. U. Stephenson, chairman of the Legislative Committee of the Medical Society of Virgina, to prepare us an announcement of what is being done. In the above notice he has told concisely what has been accomplished. We feel we should add that Dr. Stephenson has been untiring in his efforts in behalf of this work and has been most ably assisted by doctors and societies from all over the State. It is simply an evidence of what organization properly directed can do.

Early in the session of the Legislature, it seemed that medical educational standards would be attacked. For this reason, a meeting of the Legislative Committee was called to which were invited local members of the Executive Council and prominent educators. This conference resulted in securing the endorsement of at least the present standards for medical education in Virginia, not only from those assembled but also by letters from presidents of all of the schools of liberals arts in the Commonwealth.

However, the first bill introduced affecting the medical profession was the one for the re-imposition of a license tax on doctors. Dr. Stephenson has explained in detail how this resulted. Upon his request, the Executive Council of the State Society held a meeting which was well attended by men representing every section of the State. Their enthusiasm and work aganist the imposition of this tax, augurs well for the success of any project the doctors of Virginia wish "to put over." Since Dr. Stephenson prepared his report, this bill

has been defeated in the Senate by a vote of 27 to 4.

It is not known, as we go to press, what, if any, bill will now be presented with regard to doctors. Should the need arise, call will be made on the local societies and individual doctors of the State, and we feel sure they will not fail their committee or society in any emergency.

The Tri-State Medical Association of the Carolinas and Virginia

Is to meet in Greenville, S. C., February 20-21, 1924. The officers of the association have requested the local committee not to provide for any entertainments that will interfere with the scientific work and the main objects for which the members are to be assembled. They are endeavoring to act within the scope of their instructions and at the same time afford the members the opportunity for the best meeting in the history of the Tri-State Medical Association.

Make your reservations in the Imperial or Ottaray Hotels. As the accommodations of these two hostelries will probably be taxed to their fullest extent, it is requested that arrangements be made for at least two in a room, if possible.

The local committee on arrangements from the Greenville County Medical Society is composed of:

Dr. L. O. Mauldin, Chairman, Dr. Hugh Smith, Secretary, and Dr. J. L. Anderson, Dr. R. C. Bruce, Dr. W. C. Black, Dr. E. W. Carpenter, Dr. C. B. Earle, Dr. C. W. Gentry, Dr. S. G. Glover, Dr. I. H. Grimball, Dr. A. S. Pack, Dr. W. H. Powe, Dr. H. D. Wolfe.

For information as to hotels write the proprietor of the Imperial Hotel or the proprietor of the Ottaray Hotel, Greenville, S. C.: for other information to members of the committee.

Admission of Whisky and Brandy to the U. S. Pharmacopoeia, Tenth Revision.

Announcement has just been made by E. Fullerton Cook, Chairman of the Revision Committee of the United States Pharmacopoeia, that standards for whisky and brandy as medicines will be included in the new Pharmacopoeia now being revised. This is in response to a demand by the physicians of the country.

Under the national prohibition laws, whisky and brandy are classed as medicines and as such are legally prescribed in many cases of serious illness, but at the present time no legal standards exist for their purity.

All physicians of the General Revision Committee, acting as a sub-committee, were appointed to study the situation and take the necessary action. This sub-committee has issued the following statement:

"In view of the fact that a large number of physicians in the United States believe alcohol to be a valuable therapeutic agent, and in view of the widespread adulteration of the alcoholic liquors at present available, the members of this Referee Committee feel that for the protection of the public, there should be an official standard for medicinal spirits."

By including standards for whisky and brandy as medicines, in the Pharmacopoeia, which is the legal standard for drugs and medicines under the Food and Drugs Act, the machinery of the U. S. Department of Agriculture and of the Boards of Health and Boards of Pharmacy throughout the country is enlisted in protecting the sick against adulterated and poisonous products.

Richmond Has Campaign Against Cancer.

In accordance with the plan of the American Society for the Control of Cancer, during January Richmond doctors conducted a campaign against cancer which culminated in a mass meeting held on the 28th. Dr. Paul Howle was selected as general chairman of the movement in this city. The object of the campaign was purely educational. A number of doctors were appointed to appear before the various clubs and civic organizations to give a plain and simple statement of facts about cancer together with advice as to detecting the initial symptoms that patients may seek advice when the disease is in a curable stage.

A great deal of interest was manifested in the campaign, 1,200 attending the mass meeting on the last day, at which Dr. George A. Soper, managing director of the American Society for the Control of Cancer, was the chief speaker. Dr. Robert C. Bryan, state chairman of the Society, opened this meeting and talks were made by several Richmond doctors as well as by Dr. Soper.

Figures given by Dr. W. A. Plecker, director of the Bureau of Vital Statistics, showed that there were last year 1,365 deaths from cancer in Virginia; that the disease is fatal to

one woman in eight and one man in fourteen, over the age of forty years. As cancer at the outset is local in character and frequently curable, these figures should make more people "Stop—Look—Listen."

Married.

Dr. Harry Lee Claud, Newport News, Va., and Miss Julia Marvin Sarvey, in Norfolk, Va., January 5.

Dr. Lawrence O. Snead, Richmond, and Miss Empsie Shapard, Halifax, Va., February 9.

Dr. Horace Orlando Bell, Richmond, and Mrs. Alice Arlina Streit, New York City, recently.

Dr. William Harvey Dixon, Rocky Mount, N. C., and Miss Margaret Freeborn Betts, Richmond, January 19.

Dr. Walter Edward Futrell, Morganton, N. C., and Miss Phoebe Palmer, Sanford, N. C., in Richmond, January 18.

Dr. V. B. Hirst,

Of New York City, a graduate of the University of Virginia Medical School in 1918, recently visited his mother in Purcellville, Va.

Congress on Medical Education, Medical Licensure, Public Health and Hospitals.

All interested are cordially invited to attend this annual congress which is to be held in Chicago, March 3, 4 and 5, at Congress Hotel. The program promises many excellent addresses on various subjects. Dr. Arthur Dean Bevan, Chicago, is chairman of the Council on Medical Education and Hospitals of the A. M. A.; Dr. John Milton Dodson, director of the Bureau of Health and Public Instruction; Dr. Irving S. Cutter, Omaha, president of the Association of American Medical Colleges; Dr. David A. Strickler, Denver, president, of the Federation of State Medical Boards of the United States; and Dr. Frank Billings, Chicago, president of the American Conference on Hospital Services.

The Albemarle County (Va.) Medical Society

Has elected the following officers for the year 1924; President, Dr. Percy Harris, Scottsville; vice-president, Dr. W. E. Bray, University; secretary-treasurer, Dr. F. C. McCue (re-elected) Charlottesville. Meetings are held the first Tuesday of each month. Several new members were elected at the January meeting.

Dr. J. G. Bentley,

Whose address was until recently at Dunbar, Va., is now at Blackwood, Va.

Dr. Newton G. Wilson,

Formerly of Fieldale, this State, after being in North Carolina for some months, has located at Summerfield, N. C.

Dr. Charles A. Easley,

Who after practicing for several years in Bluefield, W. V., went to Pittyslvania County, Va., on account of his health, is now well and is taking up general practice in Chatham, Va.

Dr. G. G. Hankins,

Of Hampton, Va., has received an appointment to the staff of the Philadelphia General Hospital, in which institution he is now taking special work.

Dr. James N. Greear, Jr.,

Of the class of '20, University of Virginia Medical School, who has been at Manhattan Eye, Ear and Throat Hospital, New York City, for over a year, has located at 1740 M Street, Northwest, Washington, D. C., where he will limit his practice to eye, ear, nose and throat.

Child Health Magazine.

With the January issue, *Mother and Child*, for the last four years the official publication of the American Child Health Association and the American Child Hygiene Association, became *The Child Health Magazine*. The pages are doubled in size, and rather fully illustrated. We wish the magazine continued success.

Dr. W. C. Caudill,

Pearisburg, Va., has been elected a member of the board of directors of the First National Bank of that place.

Dr. R. Finley Gayle,

Richmond, associate in nervous and mental diseases at the Medical College of Virginia and extension lecturer of the College of William and Mary, is this month giving a course of lectures in mental hygiene in its relation to education, before the Richmond School of Social Work and Public Health.

Officers with Loudoun Confederate Veterans.

At a meeting held in Leesburg, Va., the last of January, Dr. C. F. Russell, of Herndon, was elected commander, and Dr. J. E. Copeland, of Round Hill, surgeon of the camp.

Members of Hopewell Board of Health.

Dr. J. N. Elder and Dr. W. S. Woody have just been appointed members of the City Board of Health of Hopewell, Va. Other members of the board are Mayor D. Lane Elder and Dr. J. C. Bodow.

The Southwestern Virginia Medical Society

Will hold its regular Spring meeting in Radford, March 20 and 21, under the presidency of Dr. S. S. Gale, of Roanoke. Other officers are Dr. D. L. Kinsolving, Abingdon, vice-president, and Dr. E. G. Gill, Roanoke, secretary-treasurer. A banquet will be tendered the visitors by the physicians of Radford on the evening of the 20th. An attractive program has been arranged, including a symposium on Diabetes by Drs. K. D. Graves, Roanoke, F. H. Smith, Abingdon, Gibson Davis, Christiansburg, and H. H. Trout, Roanoke. Dr. A. M. Showalter, Cambria, will open the discussion on this subject.

The local committee on arrangements is composed of Drs. John J. Giesen, E. G. Hall and J. A. Noblin, all of Radford.

Dr. John D. Stewart,

Of New York City, by invitation, read a paper before the Richmond Academy of Medicine in January. While in Richmond, he was entertain at dinner by Dr. M. C. Sycle.

Dr. and Mrs. Benjamin F. Iden,

Manassas, Va., entertained at a reception on January 27, in honor of their fiftieth wedding anniversary. They have spent their entire married life in Manassas, where Dr. Iden has been engaged in the practice of medicine for more than fifty years. Their two sons, Dr. John Hooe Iden, of the U. S. Navy, and Dr. B. F. Iden, Jr., are also members of the medical profession.

U. S. Civil Service Examinations.

The U. S. Civil Service Commission announces open competitive examinations, receipt of applications to close February 26, for specialist in maternal and infant hygiene, assistant in maternal and infant hygiene, and expert in maternal and infant care. Full information and application blanks may be obtained from the above named Commission, Washington, D. C., or the secretary of the board of U. S. Civil Service Examiners at the post-office or customhouse in any city.

Open competitive examinations are also announced for medical officer, junior grade; medical officer, grade A; and medical officer, grade B. Applications will be rated as received until June 30, 1924.

Applications will also be received for positions as reconstruction aide (occupational therapy) and reconstruction pupil aide (occupational therapy) until March 11; and for graduate nurse, applications to be rated as received until June 30.

Dr. Greer Baughman,

Richmond, professor of obstetrics in Medical College of Virginia, by invitation read a paper on "The Toxemias of Pregnancy" before the Norfolk County Medical Society on January 28.

Mrs. R. Lloyd Williams,

Norfolk, Va., president of the Woman's Auxiliary to the Medical Society of Virginia, while on a visit to her old home in Houston, Texas, was given a Christmas entertainment by the Woman's Auxiliary of the Harris County Medical Association, at the home of Dr. and Mrs. S. C. Red, in Houston. Mrs. Red is president of the Woman's Auxiliary of the American Medical Association. Dr. Williams, who accompanied his wife on her visit to Texas, was included as one of the honor guests and the local doctors were invited.

Dr. Williams returned to Virginia for the opening of legislature to take his seat in the House of Delegates as one of the representatives from Norfolk.

Citation in the Award of the Sofie A. Nordhoff-Jung Cancer Research Prize.

Dr. Johannes Fibiger, professor ordinarius in pathological anatomy at the University of Copenhagen, has demonstrated, following repeated experimentation, that parasites play an important role in the formation of certain types of tumors in the proventriculi of rats.

Furthermore he has succeeded in effecting papillomata and undoubted carcinoma through the parasite nematode. Where others have failed after years of persistent researches, he first met with success in artificially inducing malignant tumors through external irritations and so thrown wide new avenues to future findings. Though the earlier results of Fibiger's work date back a number of years, he unremittingly labored towards an interpretation of the significance of parasitic irritants in malignant tumor formation, likewise of mechanical and chemical irritants. Fibiger and his associates have contributed generously to the literature of cancer production through the feeding to rats of oats and the application of tar to their tissues. In this way they have confirmed the successful work of Stahr and Yamagiva.

In a word, Fibiger's advances towards the solution of the problem of the causative irritants productive of cancer are at the same time most comprehensive and most remarkable.

His name will ever appear inscribed on the first page of the History of Cancer Research.

The Commission on the award consisted of Professors Borst, Doederlein v. Rombery and Sauerbruch, all of the University of Munich.

Newport News Doctors Visit Richmond Hospitals.

Dr. Joseph T. Buxton, of the Elizabeth Buxton Hospital, Newport News, Va., accompanied by about twenty doctors from that place, recently visited Richmond and inspected the new Johnston-Willis Sanatorium and the McGuire Clinic. They were highly enthusiastic in their praises of both institutions.

Dr. E. E. Walker,

Recently of Phenix, Va., is now associated with Dr. Samuel W. Price, of Scarbro, W. Va., in the practice of medicine.

Bank Directors.

Dr. W. C. Powell and Dr. F. J. Wright, Petersburg, have been elected members of the board of directors of the Banking Trust and Mortgage Company of that city. Among the other directors are Dr. W. W. Seward, of Surry, and Dr. W. P. Hoy, of Petersburg.

Dr. Lawrence T. Price,

Richmond, has been elected commander of Stonewall Jackson Camp, No. 981, Sons of Confederate Veterans.

Dr. P. D. Lipscomb, also of this city, was re-elected surgeon.

Fire at Memorial Hospital, Winchester.

Fire of undetermined origin destroyed the central portion of the main building of Memorial Hospital, Winchester, Va., early on the night of the 18th of January. The loss of approximately $100,000 was only partially covered by insurance. All patients were removed in safety to homes and local hotels.

We have not been advised as to future plans for the hospital, but, as it had practically outgrown its present building, it its probable that a new hospital may be built on another site.

Directors of a Richmond Bank.

Dr. M. L. Anderson and Dr. J. R. Blair, both of Richmond, have been elected among the directors of the Systematic Savings Corporation, of this city.

Dr. Virgil Hammer,

One of the best known physicians of the Valley of Virginia, has been critically ill at his home in Luray, Va.

Superintendent of St. Luke's Hospital Resigns.

Miss Martha Baylor, for the past five years superintendent at St. Luke's Hospital, Richmond, resigned February 1. Miss Baylor is president of the Virginia State League of Nursing Education and has been actively interested in advancing the standard of nursing education in Virginia. She plans a special course of study at Columbia University, New York City, after which she expects to devote her time to teaching.

Miss Elizabeth Hendricks, formerly in charge of the operating room at St. Luke's, has succeeded Miss Baylor as superintendent.

U. S. Veterans' Bureau in Danville Closed.

The United States Veterans' Bureau, established in Danville, Va., for more than a year, with Dr. Claude N. Rucker in charge, has been closed and Dr. Rucker has been transferred to Huntington, W. Va. Dr. Rucker

had three hundred cases under his supervision while in Danville. That district will hereafter be looked after from the Roanoke office.

Dr. W. Armistead Gills,

Formerly of Richmond, but with the United States Navy since June, 1917, has been placed on the list of retired officers of the U. S. Navy. Dr. Gills' last service was on the Asiatic squadron.

New Business Manager at Hygeia Hospital.

Mr. W. L. Lucas, for nearly ten years credit manager of O. H. Berry & Company, of this city, has accepted the position as business manager of Hygeia Hospital, Richmond, the change becoming effective in January. The office Mr. Lucas holds is a new one at Hygeia Hospital and has been created on account of the large increase in number of patients cared for there. The hospital is owned and operated by Dr. J. R. Blair. At present it is undergoing a number of improvements.

On Hospital Board.

At a recent meeting of the board of directors of the Petersburg, Va., Hospital, Dr. William F. Drewry was re-named vice-president, and Drs. R. A. Martin and H. G. Turner were among those named as members of the board.

Dr. W. Brownley Foster

And family, of Roanoke, Va., were recent guests of Dr. Foster's parents in Richmond.

In the Confederate "Hall of Fame."

On February 2nd, there were presented to Battle Abbey (the Confederate Memorial Institute), Richmond, bronze busts of two of Virginia's most renowned and beloved members of the medical profession—Hunter Holmes McGuire, M. D., and Rawley White Martin, M. D. Not because of their achievements in the medical world were they thus honored, but because of their patriotism and of the fact that they were leaders of men in peace as well as in war.

The bust of Dr. McGuire was presented by Senator Don P. Halsey, of Lynchburg, Va., and accepted by Dr. J. Allison Hodges, of Richmond; that of Dr. Martin was presented by Dr. Stuart McGuire, of Richmond, and accepted by Mr. Randolph Harrison, of Lynchburg. Most fitting was this double presentation as Dr. McGuire and Dr. Martin were closely associated in the medical history of Virginia and were life long friends. In this issue of the journal* we give the speeches of presentation. We regret space forbade our making claim for the speeches of acceptance also, as they too bore fitting tribute to the lives of these two noble men.

*See pages 787-790.

Dr. P. L. Hill,

A medical missionary to Choon Chun, Korea, who has been on a furlough in this country on account of his health, was a recent visitor in Richmond, where he delivered several addresses. He graduated from the Medical College of Virginia in 1917 and has many friends in this State. Dr. Hill expects to return shortly to his post of duty.

Income Tax.

Every one is now so familiar with the payment of Federal income tax that it is only necessary to state that returns, with first payments should be made to the collector of internal revenue for the district in which you live by March 15th.

The Alleghany County Medical Society,

At is meeting in Clifton Forge, January 15, elected the following officers for the ensuing year: President, Dr. W. H. F. Miller, Clifton Forge; vice-president, Dr. J. V. Jordan, Covington; secretary, Dr. R. P. Hawkins, Jr., Clifton Forge; and treasurer, Dr. W. M. Revercomb, Clifton Forge.

The Mercer County (W. Va.) Medical Society,

At its annual meeting held recently, elected Dr. Joseph B. Kirk, Bluefield, president, and Dr. Walter W. Harloe, Matoaka, secretary-treasurer.

Erratum.

In the list of officers of the Warwick County (Va.) Medical Society, in the January issue (advertising page 32), we gave the name of Dr. O. T. Amory as secretary. This should have been Dr. A. D. Ownbey, secretary, Dr. Amory being vice-president.

Cancer,

A practical quarterly journal devoted to the best interests of cancer, which made its first appearance in October, is published by J. B. Lippincott Company, East Washington

Square, Philadelphia, and not by F. A. Davis, as stated at that time. The price is $5 a volume in North America. Dr. L. Duncan Bulkley has associated with him in the editorial work some of the country's best informed men on the subject of cancer.

The Rockefeller Foundation,

Located at 61 Broadway, New York City, has issued its annual report for 1922. In addition to giving the annual reports of the president, secretary and treasurer, it tells in detail of much of the work done by the Foundation, especially in foreign countries. The illustrations are good and add much to the interest of the report.

Revoke Charter.

It is announced that the circuit court at Richmond, the latter part of December, revoked the charter of the Oriental University, operated in Washington, D. C., with charter obtained from Virginia. It had for some time been known to be a fraudulent institution and was considered one of the "diploma mills."

Dr. Lewis B. McBrayer

Has resigned as superintendent of the N. C. Tuberculosis Sanatorium, at Sanatorium, and will be succeeded by Dr. Paul P. McCain, who has been assistant superintendent.

Motion Picture for Health Associations.

The Metropolitan Life Insurance Company, 1 Madison Avenue, New York City, with the advice of the National Health Council, has produced a motion picture of two reels, entitled "Working for Dear Life," with an idea of giving the audience at least a working idea of what a thorough health examination should be. The scenario is said to be well planned and the argument convincing.

With the idea of promoting health conditions throughout the country, the above named company will send the film free, except for transportation charges, to Health Associations and other organizations desiring it.

Graduate Nurses' Association of Virginia Undertakes Big Project.

This Association has pledged itself to raise $50,000, through its own efforts for the endowment of a chair of nursing at the University of Virginia. Such a course would give nurses in this section an opportunity to secure near home the graduate work for which they now have to go to Northern schools. It is stated that the proposed chair of nursing will be the first of its kind in the South. As a means to raising part of this endowment money, groups of nurses in several Virginia cities plan to put on a pageant simultaneously throughout Virginia on May 12, the birthday of Florence Nightingale. This pageant is to show the development of nursing since the days of Florence Nightingale, with special reference to the growth of the profession in this state.

Increase in Number of Deaths From Automobiles in Virginia.

Dr. W. A. Plecker, State Registrar, states that although deaths from violence in many forms are on the increase, none can compare with the great increase in automobile deaths, as shown by comparison for the first nine months of 1922 and for a similar period in 1923. For 1922, there were 94 deaths recorded in Virginia from automobile accidents, for the first nine months; in a similar period in 1923, there were 137. There were only 142 deaths for the whole of 1922. Should this rate of increase continue for the next ten years, the automobile will soon be a major cause of deaths in this State.

A New A. C. S. Monograph

The publication of a new American Chemical Society Monograph is announced by The Chemical Catalog Company of New York. This recent book by Dr. George W. Raiziss, Ph.D., and Joseph L. Gavron, B. S., is entitled "Organic Arsenical Compounds," and is a most comprehensive work on this subject.

Doctor Raiziss, Professor of Chemotherapy, Graduate School of Medicine, University of Pennsylvania, was the first laboratory worker in the United States to successfully develop American-made arsphenamines for use in the treatment of syphilis. Mr. Joseph L. Gavron has been associated with Doctor Raiziss in literary and laboratory work done in The Dermatological Research Laboratories of Philadelphia.

The Eastern Division of the American Roentgen Ray Society

Held its annual meeting in Atlantic City in January, Dr. Thomas A. Groover, of Washington, D. C., presiding. It was an excellent meeting and well attended. Virginia doctors in attendance were Drs. A. L. Gray, Fred M. Hodges, C. M. Hazen and D. D. Talley, of Richmond, James W. Hunter, of Norfolk, J. T.

McKinney, of Roanoke, Hunter B. Spencer, of Lynchburg. Dr. Charles Eastmond, of Brooklyn, was elected chairman; Dr. Ralph D. Leonard, of Boston, vice-chairman, and Dr. Fred M. Hodges, of Richmond, Va., secretary. The meetings are held in January of each year at Atlantic City.

Dr. Bell Succeeds Dr. Maloney With Richmond Health Bureau.

Dr. G. R. Maloney, for nineteen months with the Bureau of Health of the Department of Public Welfare of Richmond, resigned his position as chief of the division of communicable diseases, the first of February, with the intention of entering general practice. He has been succeeded by Dr. H. O. Bell who recently joined the Bureau in the capacity of medical inspector.

Dr. Oldham Escapes From Perilous Position.

Dr. M. C. Oldham and a friend, of Lancaster, Va., had a narrow escape from death, the middle of January while out duck hunting. A terrific wind storm broke and, despite strenuous efforts, they were unable to make shore. After dark they began firing guns with the hope of attracting help. Owing to the high wind, the report of the guns could not be heard but they were finally sighted by the blaze from the muzzles of their guns and help was sent them. They were much exhausted from their experience and suffered greatly from the intense cold.

In Charge of Health Units.

Dr. E. L. Sutherland, formerly of Roanoke, Va., took charge of the Nansemond-Suffolk joint county and city health unit, beginning January 15, succeeding Dr. I. C. Riggin who resigned to take up a course of study at the Johns Hopkins School of Public Health Administration.

Dr. E. D. Woodard, of Bayboro, N. C., has entered upon his duties in charge of a health unit in Isle of Wight County, Va.

A Word of Appreciation.

We wish to express our thanks to members of the Medical Society of Virginia for their splendid co-operation in sending checks to cover 1924 assessments in response to the "blue slips" placed in the January journal. It is gratifying to learn from this response also that the VIRGINIA MEDICAL MONTHLY "is not without honor" in its own state.

Don't forget, however, that our advertisers are entitled to a portion of the time you can spend in looking over our pages.

The Virginia Tuberculosis Association,

At its annual meeting in Richmond, January 18, elected Dr. Charles R. Grandy, of Norfolk, president. He succeeds Captain W. W. Baker who had been president since the organization of the association. Captain Baker was elected honorary president. Dr. William M. Smith, of Alexandria, was elected executive secretary, and Dr. E. C. Levy, of Richmond, was elected first vice-president.

The Norfolk County Medical Society

Has adopted the report of the special Committee on Narcotics, urging members to refer all cases of drug addiction to the City Health Department for appropriate hospital treatment. It also advised total discontinuance of the dispensing of narcotics, issuing prescriptions instead, thereby lessening liability to reproach.

Dates Set for State Society Meeting.

At a meeting of the Executive Council on January 22, the dates were set for the Staunton meeting of the Medical Society of Virginia, as October 14, 15, 16 and 17, 1924. It is announced that the new hotel will be completed in the Spring. This with the Virginia Hotel with which it is connected, the Beverley, the Y. M. C. A., and other places which may be secured in case of necessity, should provide ample accomodation, though it is always well to make reservation as far in advance as possible, so as to be at the hotel of choice. The doctors of Augusta County are manifesting much interest in the approaching meeting and will shortly announce committees in charge of the various features of the meeting.

Dr. Garnett Nelson

Has been re-elected president of the Richmond Tuberculosis Association for the ensuing year.

Dr. R. W. Garnett,

Health Officer of Danville, Va., has declined an offer to become health officer of Greensboro, N. C., that he may continue with the work he has been doing in Danville.

New St. Luke's Hospital in Bluefield, W. Va.

Early in January, the new St. Luke's Hospital was opened in Bluefield, W. Va. Located in the residential section of the city, the hospital is a model of completeness in every

respect and thoroughly fireproof. Dr. C. M. Scott, assisted by Dr. T. E. Vass, is in charge of the surgical department, and Dr. R. H. Hoge is in charge of the medical department. The hospital can care for approximately one hundred patients. The nurses's home in a separate building has sixteen large rooms, likewise equipped with all modern conveniences. So far as known, this hospital is the first institution of its kind in the world to be thoroughly equipped with radio. Each bed in the hospital is provided with a head piece and the system is so devised that when a patient has callers, all who care to may "listen in."

The National Committee for Mental Hygiene,

At its annual meeting recently held in New York City, re-elected Dr. Frankwood E. Williams, of that city, medical director for the ensuing year.

Health News.

The first weekly issue of this bulletin, published by the New York State Department of Health, made its appearance in January. It "inaugurates a policy of furnishing information on current events in public health, to the health officers, public health nurses, physicians, organizations and individuals interested in public health work." Dr. Nicoll is to be congratulated on this evidence of progress in his department.

Dr. C. C. Coleman,

Richmond, has returned from a trip to Florida, where he enjoyed a winter vacation.

Have You Told Your Patients About "Hygeia"?

This journal of "individual and community health" is published monthly by the American Medical Association at the price of $3 a year. It is intended primarily for the layman but furnishes interesting reading for any one. Highly educated people are frequently ignorant of the fundamental principles of health, but they are always interested in learning something of what the doctor knows. This magazine if generally read by laymen should do much in helping the doctor in his fight against quackery.

Fire in Clinic Building at Johns Hopkins.

A fire believed to have been caused by a short circuit broke out in a machinery room directly beneath one of the operating rooms in the women's clinic building at John Hopkins Hospital on January 30. Three women prepared for operation were removed and the flames were confined to the one building.

Obituary

Dr. Claybrook Fauntleroy,

Of Dragonville, Va., died at the home of a sister in Richmond, on January 10. He had been in bad health for sometime. He was born in King and Queen County, Va., sixty-four years ago and received his medical education at the University of Pennsylvania, Philadelphia, from which he graduated in 1882. Dr. Fauntleroy had been a member of the Medical Society of Virginia since 1888. He is survived by his wife and a large family connection.

Dr. Paulus Fitz James Miller,

Of Virginia Beach, Va., after having been in bad health for sometime, died at a Norfolk hospital, January 19. Interment took place in Richmond. Dr. Miller was sixty-nine years of age and was a member of the Medical Society of Virginia. He was a physician of the "old school" and was much beloved in his section.

Dr. Henry Dorrance Beyea.

A retired surgeon of Philadelphia, who had recently made his home at Ware Neck, Va., died early on the morning of January 20th. He was apparently in good health, having been out in the neighborhood the previous afternoon. Dr. Beyea was fifty-six years of age and a graduate in medicine from the University of Pennsylvania in 1891. He had joined the Medical Society of Virginia a few months ago. He is survived by his wife and four children.

Dr. Luther Emmett Holt,

One of the best known pediatricians of this country and professor of diseases of children in Columbia University, College of Physicians and Surgeons, New York City, died in Peking, China, the middle of January, from heart disease. Last Fall, he was assigned by the Rockefeller Foundation as visiting professor of pediatrics to the Peking University Medical College and had just about completed the course of lectures which he was to give in that city. He was sixty-eight years of age and had graduated in medicine from Columbia University, New York, in 1889.